

APPLICATION FOR TEMPORARY CHANGE OF WATER

RECEIVED
AUG 15 1990

RECEIVED

AUG 10 1990

STATE OF UTAH

DIVISION OF
OIL, GAS & MINING

WATER RIGHTS

PRICE

Rec. by _____
Fee Paid \$ _____
Receipt # _____
Microfilm _____
Roll # _____

For the purpose of obtaining permission to make a temporary change of water in the State of Utah, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of Section 73-3-3 Utah Code Annotated 1953, as amended.

*WATER RIGHT NO. 09 Area _____ *APPLICATION NO. t 90 -09 -01

Changes are proposed in (check those applicable)

_____ point of diversion. X place of use. X nature of use. _____ period of use.

1. OWNER INFORMATION

Name: Phillips Petroleum Company *Interest: 100 %

Address: 152 North Durbin Floor 2

City: Casper State: Wyoming Zip Code: 82601

2. *PRIORITY OF CHANGE: August 10, 1990 *FILING DATE: August 10, 1990

*Is this change amendatory? (Yes/No): No

3. RIGHT EVIDENCED BY: 09-281 (A32773)

Prior Approved Temporary Change Applications for this right: None

***** HERETOFORE *****

4. QUANTITY OF WATER: 8.0 cfs and/or _____ ac-ft.

5. SOURCE: (20) Underground Wells

6. COUNTY: San Juan

7. POINT(S) OF DIVERSION: See Attached Sheet

Description of Diverting Works: All 16-inch diameter, 20-30 feet deep

8. POINT(S) OF REDIVERSION

The water has been rediverted from _____ at a point: _____

Description of Diverting Works: _____

9. POINT(S) OF RETURN

The amount of water consumed is 8.0 cfs or _____ ac-ft.

The amount of water returned is _____ cfs or _____ ac-ft.

The water has been returned to the natural stream/source at a point(s): _____

*These items are to be completed by the Division of Water Rights.

Temporary Change

10. NATURE AND PERIOD OF USE

Irrigation: From _____ to _____
Stockwatering: From _____ to _____
Domestic: From _____ to _____
Municipal: From _____ to _____
Mining: From _____ to _____
Power: From _____ to _____
Other: Oilfield From January 1 to December 31

11. PURPOSE AND EXTENT OF USE

Irrigation: _____ acres. Sole supply of _____ acres.
Stockwatering (number and kind): _____
Domestic: _____ Families and/or _____ Persons.
Municipal (name): _____
Mining: _____ Mining District in the _____ Mine.
Ores mined: _____
Power: Plant name: _____ Type: _____ Capacity: _____
Other (describe): Oilfield pressure maintenance and secondary recovery uses.

12. PLACE OF USE

Legal description of place of use by 40 acre tract(s): Ratherford Unit in San Juan County.

13. STORAGE

Reservoir Name: _____ Storage Period: from _____ to _____
Capacity: _____ ac-ft. Inundated Area: _____ acres.
Height of dam: _____ feet.
Legal description of inundated area by 40 tract(s): _____

***** THE FOLLOWING CHANGES ARE PROPOSED *****

14. QUANTITY OF WATER: _____ cfs and/or 3.0 ac-ft.

15. SOURCE: (20) Underground Water Wells

Balance of the water will be abandoned: _____, or will be used as heretofore: X

16. COUNTY: San Juan

17. POINT(S) OF DIVERSION: Same as Heretofore

Description of Diverting Works: _____

*COMMON DESCRIPTION: 2 miles SE of Montezuma Creek Montezuma Creek Quad

18. POINT(S) OF REDIVERSION

The water will be rediverted from _____ at a point: _____

Description of Diverting Works: _____

19. POINT(S) OF RETURN

The amount of water to be consumed is _____ cfs or 3.0 ac-ft.

The amount of water to be returned is _____ cfs or _____ ac-ft.

The water will be returned to the natural stream/source at a point(s): _____

20. NATURE AND PERIOD OF USE

Irrigation: From ___/___/___ to ___/___/___
Stockwatering: From ___/___/___ to ___/___/___
Domestic: From ___/___/___ to ___/___/___
Municipal: From ___/___/___ to ___/___/___
Mining: From ___/___/___ to ___/___/___
Power: From ___/___/___ to ___/___/___
Other: From 8 / 10 / 90 to 8 / 9 / 91

21. PURPOSE AND EXTENT OF USE

Irrigation: _____ acres. Sole supply of _____ acres.
Stockwatering (number and kind): _____
Domestic: _____ Families and/or _____ Persons.
Municipal (name): _____
Mining: _____ Mining District at the _____ Mine.
Ores mined: _____
Power: Plant name: _____ Type: _____ Capacity: _____
Other (describe): Oil & gas well construction and other associated uses.

22. PLACE OF USE

Legal description of place of use by 40 acre tract(s): _____
Ratherford Unit 12W-44A: SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 12, T41S, R23E, SLB&M
Ratherford 11-41: NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 11, T41S, R23E, SLB&M.

23. STORAGE

Reservoir Name: _____ Storage Period: from _____ to _____
Capacity: _____ ac-ft. Inundated Area: _____ acres.
Height of dam: _____ feet.
Legal description of inundated area by 40 tract(s): _____

24. EXPLANATORY

The following is set forth to define more clearly the full purpose of this application. Include any supplemental water rights used for the same purpose. (Use additional pages of same size if necessary):
3.0 acre feet of water will be taken from the Ratherford Unit well complex and used for the construction of two additional wells.

The undersigned hereby acknowledges that even though he/she/they may have been assisted in the preparation of the above-numbered application through the courtesy of the employees of the Division of Water Rights, all responsibility for the accuracy of the information contained herein, at the time of filing, rests with the applicant(s).

S. H. Oden
Signature of Applicant(s)

Application for Temporary Change of Water
Phillips Petroleum Company

Paragraph #7 Heretofore Points of Diversion and
Paragraph #17 Hereafter Points of Diversion

- 1) S. 950 ft. & W. 148 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 2) S. 1014 ft. & W. 442 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 3) S. 1007 ft. & W. 741 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 4) S. 1010 ft. & W. 592 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 5) S. 982 ft. & W. 294 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 6) S. 887 ft. & W. 2 ft. from NE Cor. Sec. 5, T41S, R24E, SLB&M
- 7) S. 863 ft. & E. 145 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 8) S. 843 ft. & E. 293 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 9) S. 818 ft. & E. 440 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 10) S. 803 ft. & E. 590 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 11) S. 789 ft. & E. 739 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 12) S. 803 ft. & E. 1137 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 13) S. 802 ft. & E. 1334 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 14) S. 759 ft. & E. 1529 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 15) S. 715 ft. & E. 1725 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 16) S. 672 ft. & E. 1920 ft. from NW Cor. Sec. 4, T41S, R24E, SLB&M
- 17) S. 1792 ft. & W. 352 ft. from NE Cor. Sec. 4, T41S, R24E, SLB&M
- 18) S. 1792 ft. & W. 952 ft. from NE Cor. Sec. 4, T41S, R24E, SLB&M
- 19) S. 1792 ft. & W. 652 ft. from NE Cor. Sec. 4, T41S, R24E, SLB&M
- 20) S. 1714 ft. & W. 1545 ft. from NE Cor. Sec. 4, T41S, R24E, SLB&M

STATE ENGINEER'S ENDORSEMENT

TEMPORARY CHANGE APPLICATION NUMBER: t90-09-01

1. August 10, 1990 Change Application received.
2. August 13, 1990 Application designated for APPROVAL by MP.
3. Comments:

Conditions:

This application is hereby APPROVED, dated August 13, 1990, subject to prior rights and this application will expire on August 9, 1991.



Mark Page, Area Engineer
for
Robert L. Morgan, State Engineer

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL
WELL ☒

GAS
WELL ☐

OTHER ☐

2. NAME OF OPERATOR

Phillips Petroleum Company

3. ADDRESS OF OPERATOR

152 N. Durbin, 2nd Floor, Casper, WY 82601

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)

At surface

1221' FWL & 1369' FNL, Sec. 20 (SW NW)

At proposed prod. zone Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

Approximately 4 miles SW of Montezuma Creek, Utah

15. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drlg. unit line, if any)

3911'

16. NO. OF ACRES IN LEASE

2534

17. NO. OF ACRES ASSIGNED
TO THIS WELL

20

18. DISTANCE FROM PROPOSED LOCATION*
TO NEAREST WELL, DRILLING, COMPLETED,
OR APPLIED FOR, ON THIS LEASE, FT.

829'

19. PROPOSED DEPTH

5750' DSCR

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

4785' GR

22. APPROX. DATE WORK WILL START*

Upon Approval

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	120'	Circulate to Surface
12-1/4"	9-5/8"	36#	1670'	Circulate to Surface
8-3/4"	7"	20#, 23#, 26#	5750'	Desired TOC is 1570'. Final volume will be based on caliper hole volume plus 20%.

Phillips Petroleum Company proposes to drill a 5750' development well to the Desert Creek Formation. Blow out preventers will be tested weekly.

I hereby certify that I am responsible under the terms and conditions of the lease to conduct lease operations in conjunction with the application.

Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by Phillips Petroleum Company.

cc: O+6 BLM, Farmington - 1 P.J. Konkell - 1 R. Redington - 2 Utah O&GCC - 1 L.E. Hasely,
1 R.C. Arnim - 1 Casper RC, 1 M. L. Menghini

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED S. H. Oden S. H. Oden TITLE District Superintendent DATE 11-21-90

(This space for Federal or State office use)

API

PERMIT NO.

43-037-31590

APPROVAL DATE

APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING

APPROVED BY

TITLE

DATE: 12-3-90

DATE: 12-3-90

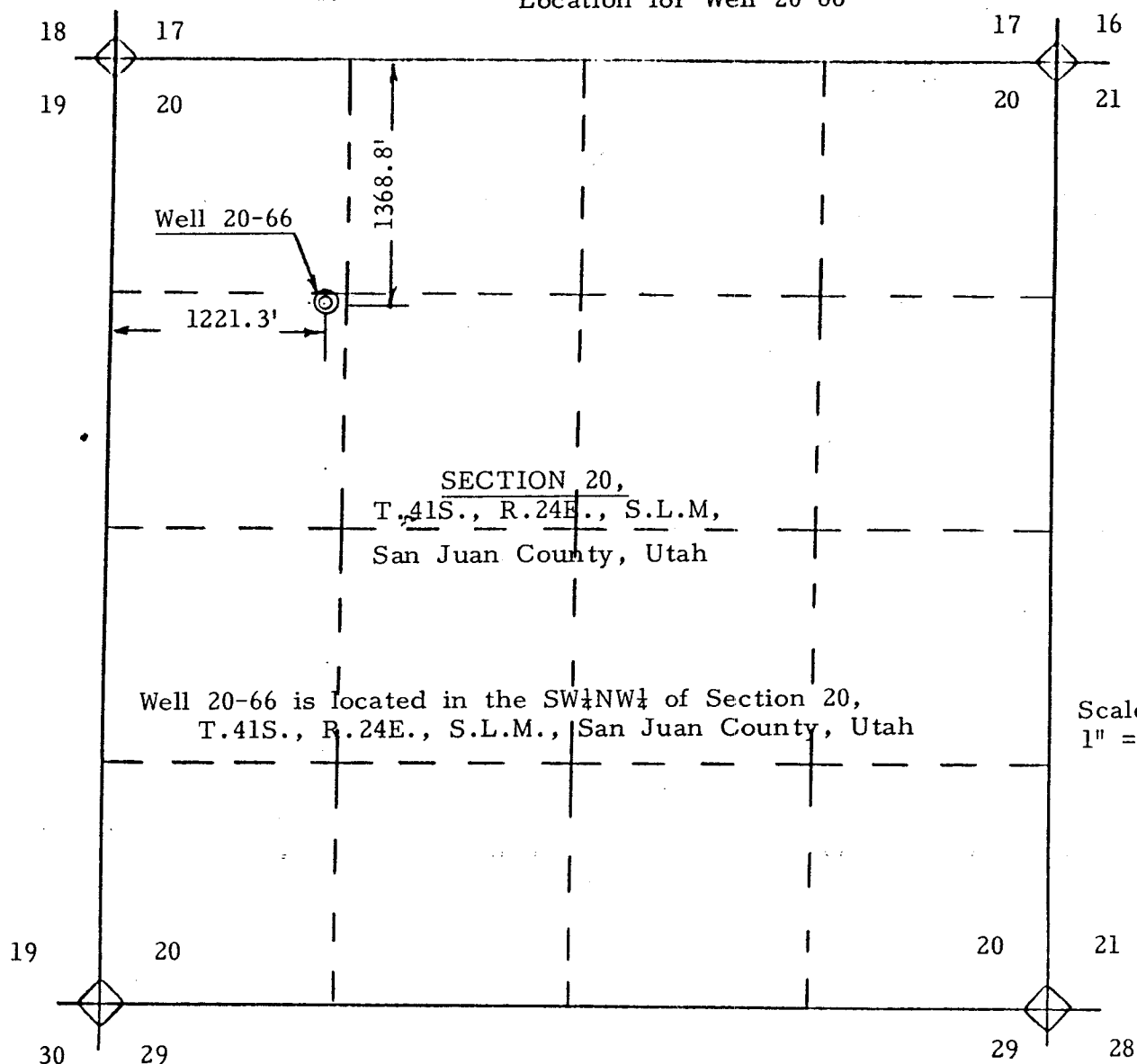
CONDITIONS OF APPROVAL, IF ANY:

BY: J. H. Matthews

WELL SPACING: Ratherford Unit

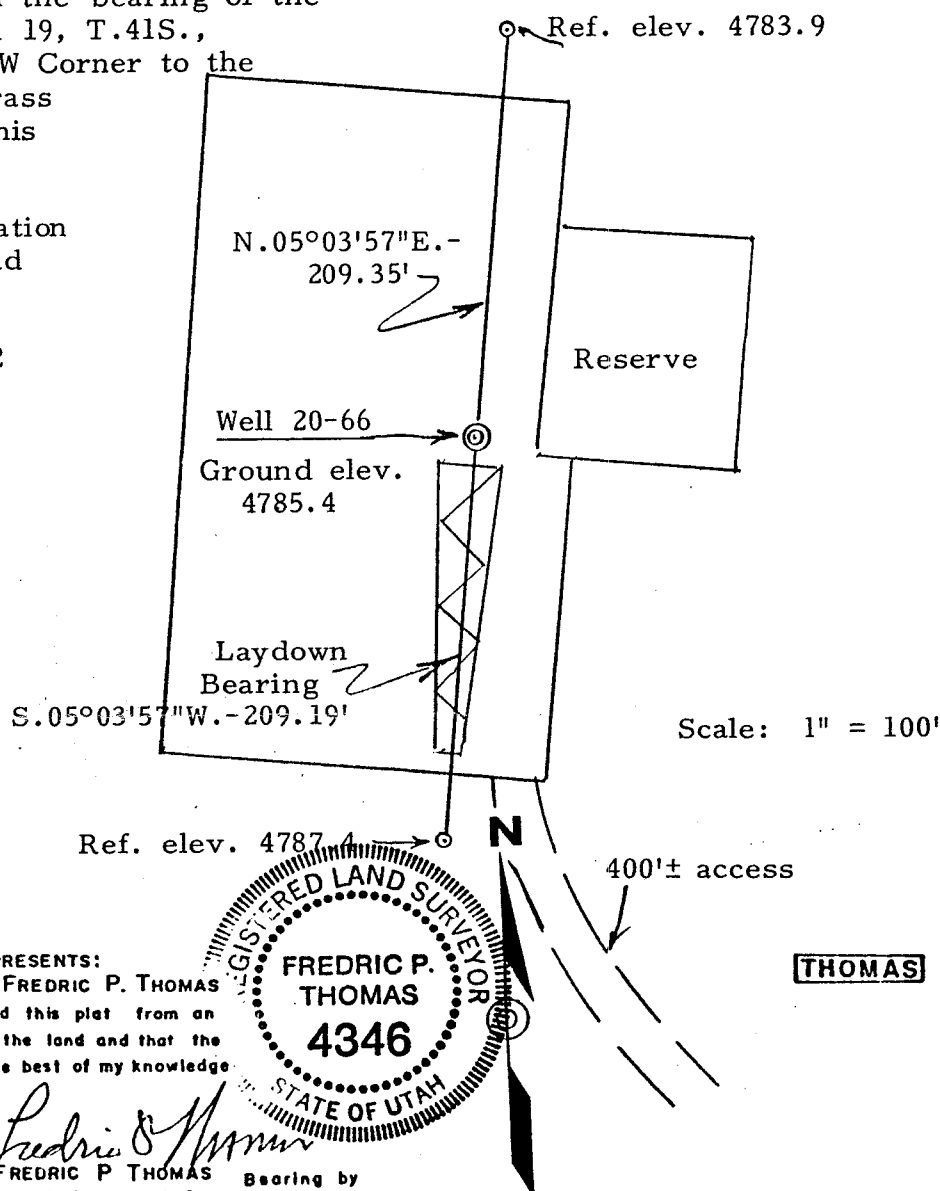
*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



Bearing is based on the bearing of the west line of Section 19, T.41S., R.24E., from the NW Corner to the SW Corner, both brass cap monuments. This bearing is South.

Datum elev. is elevation shown on USGS quad map for SE Corner Section 12, T.41S., R.23E. - Elev. 4802



KNOW ALL MEN BY THESE PRESENTS:
THAT I, FREDRIC P. THOMAS
do hereby certify that I prepared this plat from an
actual and accurate survey of the land and that the
same is true and correct to the best of my knowledge
and belief.

Fredric P. Thomas
FREDRIC P. THOMAS
Reg. L.S. and P.E.
Colo. Reg. No. 6728
Bearing by
Solar
observation

THOMAS Engineering Inc.

215 N. Linden
Corleaz, Colorado
565-4496

Phillips Petroleum Company
Ratherford Unit 20-66
SW NW Section 20, T41S, R24E
San Juan County, Utah

Supplemental Information to Form 3160-3, Application for Permit to Drill, Deepen, or Plug Back.

DRILLING PROGRAM

1. Estimated Tops of Geologic Markers (RKB):

Ground level elevation is 4,785'. Estimated KB height is 13'.

Shinarump	2,362'	Ismay	5,403'
DeChelly	2,643	Gothic Shale	5,541
Hermosa	4,596	Desert Creek	5,553

2. Top and Bottom Depths at which Water, Oil, Gas, Salt, Uranium, Coal, and Other Mineral Bearing Formations Are Expected:

Water is expected in the Navajo, Wingate, and DeChelly formations. The lowest known usable water is expected at the base of the Wingate at 1,518'. Oil and associated gas are expected in the Ismay and Desert Creek formations. Salt may be encountered beneath the Desert Creek formation.

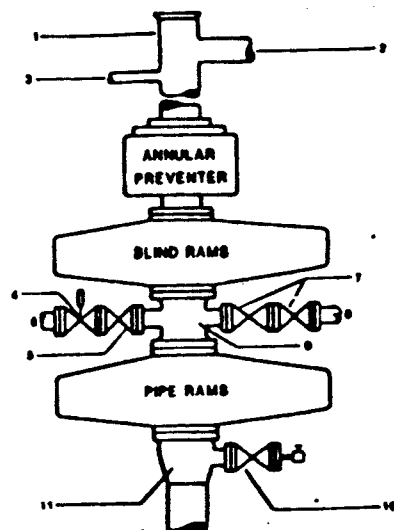
3. Blowout Prevention Equipment:

The BOP equipment will be 11" 3,000 psi WP. An accumulator system will be used with hydraulic controls located at the accumulator. Remote controls will be readily accessible to the driller.

BOP pressure tests up to 3,000 psi (2,100 psi for the annular) shall be conducted upon initial installation, whenever any seal is broken, after any repairs, and at thirty (30) day intervals. In addition, the BOP's will be function tested each trip out of the hole, and pressure tested weekly to 1,500 psi.

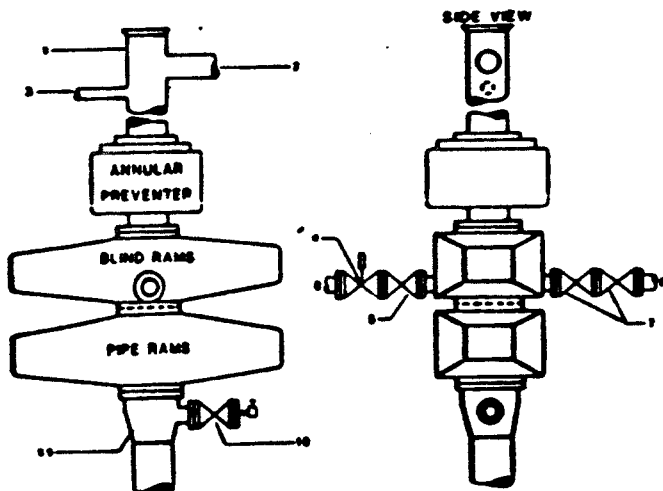
BOP tests will be conducted in accordance with Federal requirements and the Phillips Petroleum Company Well Control Manual. BOP drills will be conducted weekly for each drilling crew. All pressure tests and BOP drills will be witnessed by Phillips' representative and the contractor's senior supervisor and recorded in the driller's log which will remain on the rig floor at all times.

The wellhead equipment shall consist of an 11" 3,000 psi WP x 9-5/8" SOW bradenhead and an 11" 3,000 psi WP x 7-1/16" 3,000 psi WP tubing head.



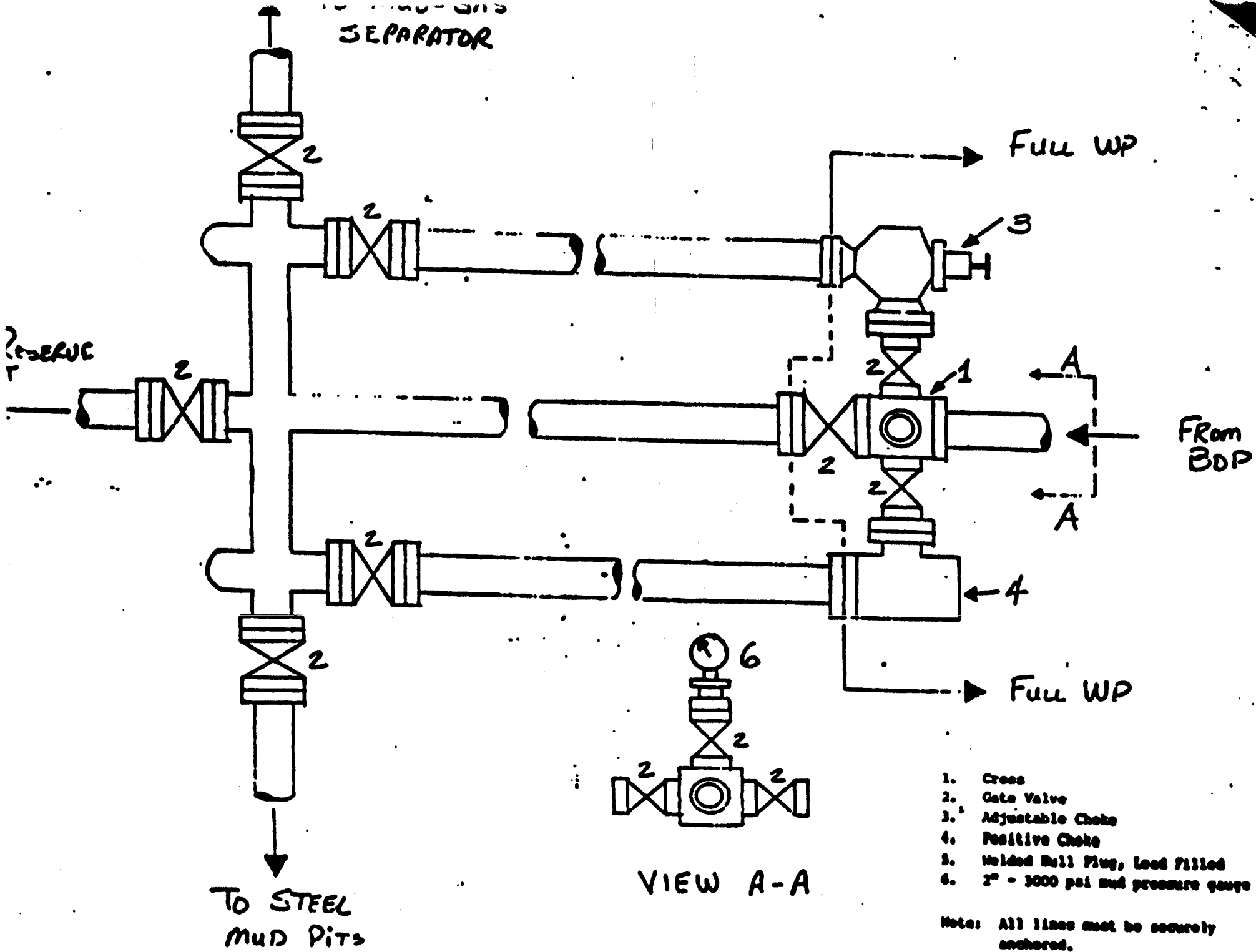
1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 3" FE PRESSURE-OPERATED CHOKE LINE VALVE
5. 3" FE GATE VALVE
6. 3" FE CHOKE LINE TO CHOKE MANIFOLD
7. 2" FE GATE VALVES
8. 2" FE KILL LINE
9. DRILLING SPOOL
10. 2" SE OR FE GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING

Figure 7-7. Standard Hydraulic Blowout Preventer Assembly
(3 M Working Pressure) Alternative 1



1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 3" PRESSURE OPERATED CHOKE LINE VALVE
5. 3" GATE VALVE
6. 3" CHOKE LINE TO CHOKE MANIFOLD
7. 2" GATE VALVES
8. 2" FE KILL LINE
9. 2" SE OR FE GATE VALVE WITH NEEDLE VALVE
10. 2" SE OR FE GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING

Figure 7-8. Standard Hydraulic Blowout Preventer Assembly
(3 M Working Pressure) Alternative 2 (without Drilling Spool)



4.a. Casing and Cementing Programs:

All usable water and productive oil and gas zones will be covered with casing and cement as detailed below:

Conductor Pipe:

Hole Size : 17-1/2" to 120 ft
 Casing : 120', 13-3/8", 48 lb/ft, H-40, ST&C
 Cement : Cement casing to surface with 180 sx Class 'G' cement.

Surface Casing:

Hole Size : 12-1/4" to 1,670 ft
 Casing : 1,670', 9-5/8", 36 lb/ft, J-55, ST&C
 Cement : Cement casing to surface with 320 sx Light cement followed by 275 sx Class 'G' cement. Possible top job with 100 sx Class 'G' cement.
 Casing Test : Will test to 1,500 psi prior to drilling out.

Production Casing:

Hole Size : 8-3/4" to 5,750 ft TD
 Casing : Surface to 3,300', 7", 20 lb/ft, J-55, ST&C
 3,300' to 4,900', 7", 23 lb/ft, J-55, ST&C
 4,900' to 5,750', 7", 26 lb/ft, J-55, ST&C
 Cement : Cement casing to desired TOC of 1,570' for the lead slurry and of 4,900' for the tail. The lead and tail slurries will be Light and Class 'G' cements respectively. Final cement volume will be based on caliper log hole volume plus 20% excess.
 Casing Test : Will test to 2,500 psi.

4.b. Auxiliary Equipment to be Used:

Kelly Cocks : Upper and lower with handle available.
 Bit Floats : None.
 Mud Monitoring Equipment : Pit level indicator and flowline sensor.
 Drill String Safety Valve: Will have available on the drill floor at all times to fit any section of tubing or drill string being used.

5. Drilling Fluids:

Adequate inventories of mud materials will be stored on location to build a mud volume equal to the active system on the rig in order to assure well control. The drilling fluid program is as follows:

0-1,670':

Type : Fresh water and gel
Mud Weight : 8.4 to 8.6 ppg
Fluid Loss : No Control

1,670'-2,600':

Type : Fresh water, low solids, non-dispersed polymer
Mud Weight : 8.6 to 9.0 ppg
Viscosity : 32 to 38 sec/qt
Fluid Loss : Below 15 cc/30 min
pH : 10.0 to 10.5 using caustic soda

2,600'-5,750':

Type : Fresh water, low solids, non-dispersed polymer
Mud Weight : 9.0 to 9.6 ppg
Viscosity : 40 to 45 sec/qt
Fluid Loss : Below 10 cc/30 min
pH : 10.0 to 10.5 using caustic soda

6. Testing, Logging, and Coring Program:

Logging Program:

1. GR, SP, DIL, BHC Sonic, CAL from TD to surface casing.
2. GR, CNL/LDT, PE, CAL from TD to 3,750'.

Sample Program : 30' samples from surface casing to 5,300'.
10' samples from 5,300' to TD.

Testing Program : Record pressures from pay zones with RFT.

Mud Logging : Mud log from 5,300' to TD.

7. Down Hole Conditions:

Maximum BHP expected is 2,000 psi
H₂S is anticipated in the Desert Creek formation. An H₂S contingency plan will be utilized.
Abnormal pressures and temperatures are not anticipated.

8. Other Facets:

Anticipated spud date is January 2, 1990.
Drilling time to TD will be approximately 15 days depending upon unforeseen problems and/or weather conditions.

CULTURAL RESOURCE REPORT

The Navajo Historic Preservation Office is currently preparing a cultural resource inventory of the subject wellsite. A copy of the report will be sent to the BIA in Shiprock.

SURFACE USE PROGRAM

1. Existing Roads

- a. Access to existing lease roads is approximately 5 miles south of Montezuma Creek, Utah.
- b. The existing roads will be maintained in it's present condition or upgraded as needed during drilling operations.
- c. Refer to the attached access road map for road information.

2. Access Roads to be Constructed or Reconstructed

This well is in an existing oil field. Roads currently exist to within 400 feet of the well site.

The 400 feet of new access will be flat bladed and ditched with culverts and gravel used where needed.

3. Location of Existing Wells

Locations of existing wells are shown on the attached maps.

4. Production Facilities

Production from the proposed well will be piped to the Ratherford Unit Satellite #20 located in the NE SW Sec. 20-T41S-R24E, San Juan County, Utah. The liquids will then be piped to Tank Battery #1, located in the SW SW Sec. 16-T41S-R24E.

5. Water Supply

- a. The source of water to drill the subject well will be from the River Booster, NE/4 Sec. 5., or from the Water Injection Plant, SE/4 Sec. 17 in T41S-R24E, San Juan County, Utah.
- b. The drilling water will be trucked from the water source to the subject well.
- c. A water supply well will not be drilled on the lease.

6. Construction Materials

- a. Only native soils will be used for construction of wellsite and the access road.
- b. Pit run rock will be used on the wellsite and access road when needed.
- c. The above materials are owned by the Navajo Tribe.

7. Waste Disposal

- a. Cuttings: Cuttings will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.
- b. Drilling Fluid: Drilling fluid will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.
- c. Garbage/Trash: All garbage and trash will be put in the burn pit. The burn pit will be fenced on four sides. After the burn pit is no longer in use, the trash and garbage will be covered with a minimum of 4 feet of fill.
- d. Salt: No salts are anticipated on this well. If salt is present, it will be disposed of in the reserve pit.
- e. Chemicals: Chemicals used in the well will be disposed of in the reserve pit.
- f. Sewage and graywater: Sewage and graywater from the drillers and Phillips staff trailers will be held in a self contained system. Portable chemical toilets will also be available on location.
- g. Produced fluids: Produced fluids from the well will be placed in tanks on location or piped to Tank Battery #1.

8. Ancillary Facilities:

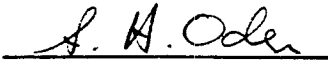
- a. There will be no drilling camp on location. Several mobile housing units will be on location for various personnel. A self contained sewage and graywater system will be provided for these facilities.
- b. No airstrip will be needed.

9. Well Site Layout
 - a. Refer to the attached rig layout plan.
 - b. Lining of the reserve pit is not anticipated. If porous soils are encountered the pit will be lined.
10. Surface Reclamation Plan:
 - a. Construction Program:
 1. Six to eight inches of surface material will be stripped and stockpiled prior to construction. This soil will not be used for any purpose except final rehabilitation of the disturbed area.
 2. See the cross sectional diagram of the location for construction specifics.
 3. All temporary disturbances will be restored to their original contour.
 4. Trees, if any, will be stockpiled separately of topsoil.
 - b. Well Abandonment: The disturbed areas will be recontoured to the original topography. No unnatural depressions will be left that may collect water. The stockpiled topsoil will be distributed evenly over the area. The area will be reclaimed and seeded in accordance with BLM specifications.
 - c. Producing Well: Those areas not needed for production purposes will be recontoured to the surrounding topography. Topsoil will be evenly distributed over areas not needed for production. These areas will be seeded per BLM specifications.
 - d. Pipelines and flowlines needed for producing this well will be above ground.
 - e. Rehabilitation will begin the fall following the completion of drilling activities depending on weather conditions and the pit evaporation rate.
11. Surface Ownership: The wellsite location, access road and leadline are on the Navajo Indian Reservation. No dwellings are in the proposed drilling area.
12. Other Information: Anticipated drilling time is 15 days, dependent on unknown problems and weather.

13. Operator's Representative and Certification:

S. H. Oden
District Superintendent
Phillips Petroleum Company
152 N. Durbin, 2nd floor
Casper, Wyoming 82601
(307) 237-3791

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist, that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Phillips Petroleum Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of false statement.

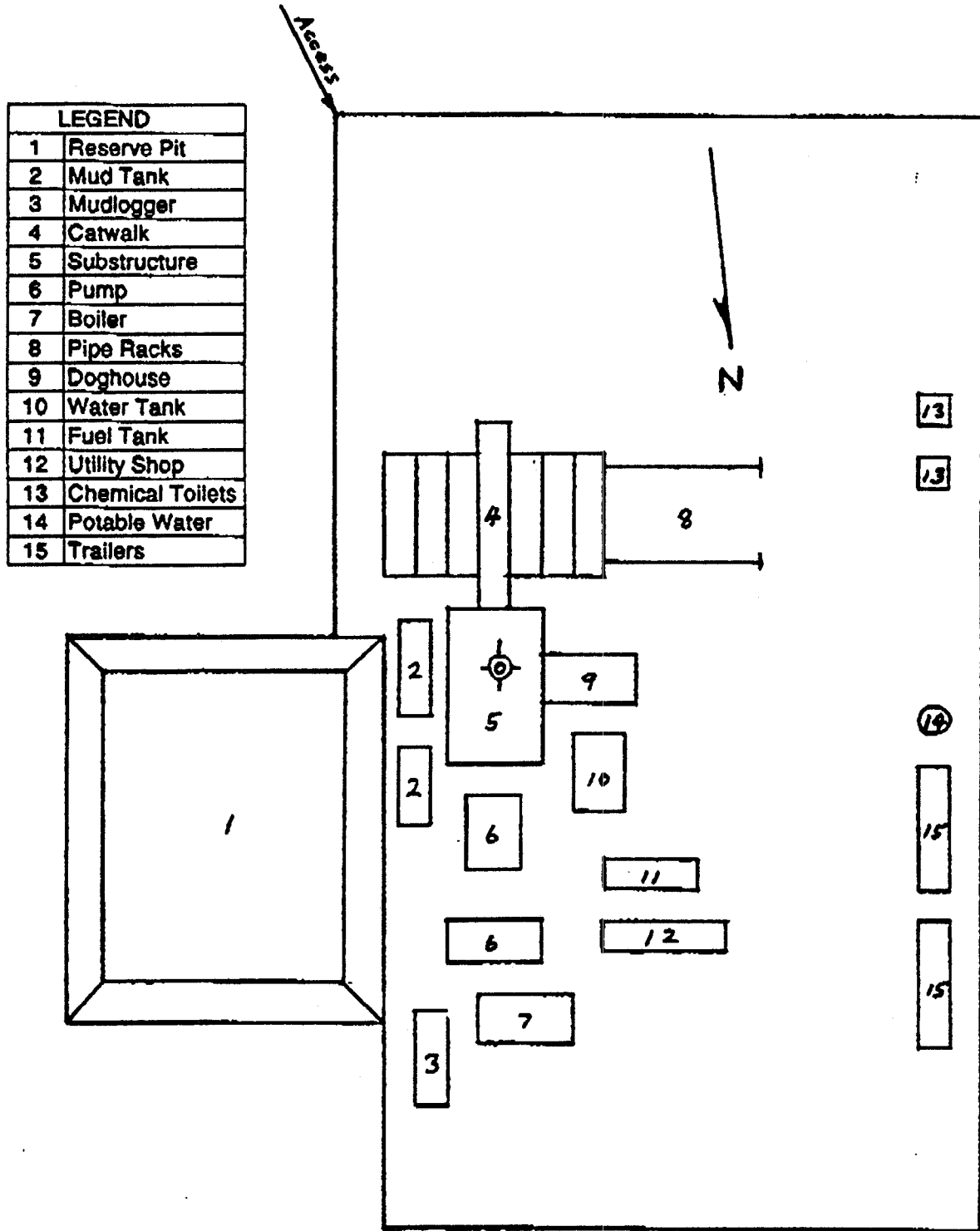

S. H. Oden
District Superintendent

11/30/90
Date

LEH/crr/fb
11-15-90

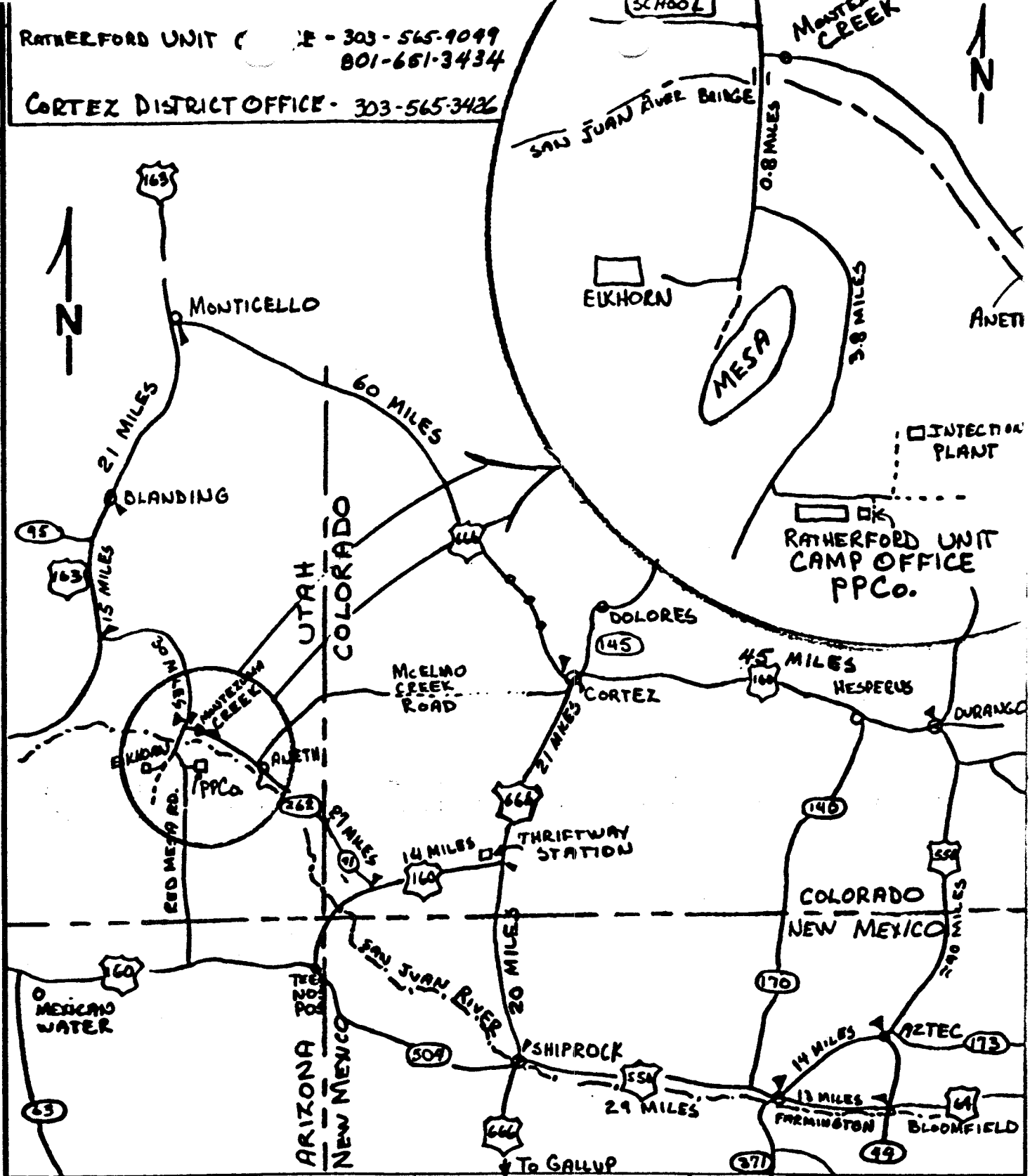
Ratherford Unit 20-66 **San Juan County, Utah** **Location Layout**

(Overall Size: 285' x 350')

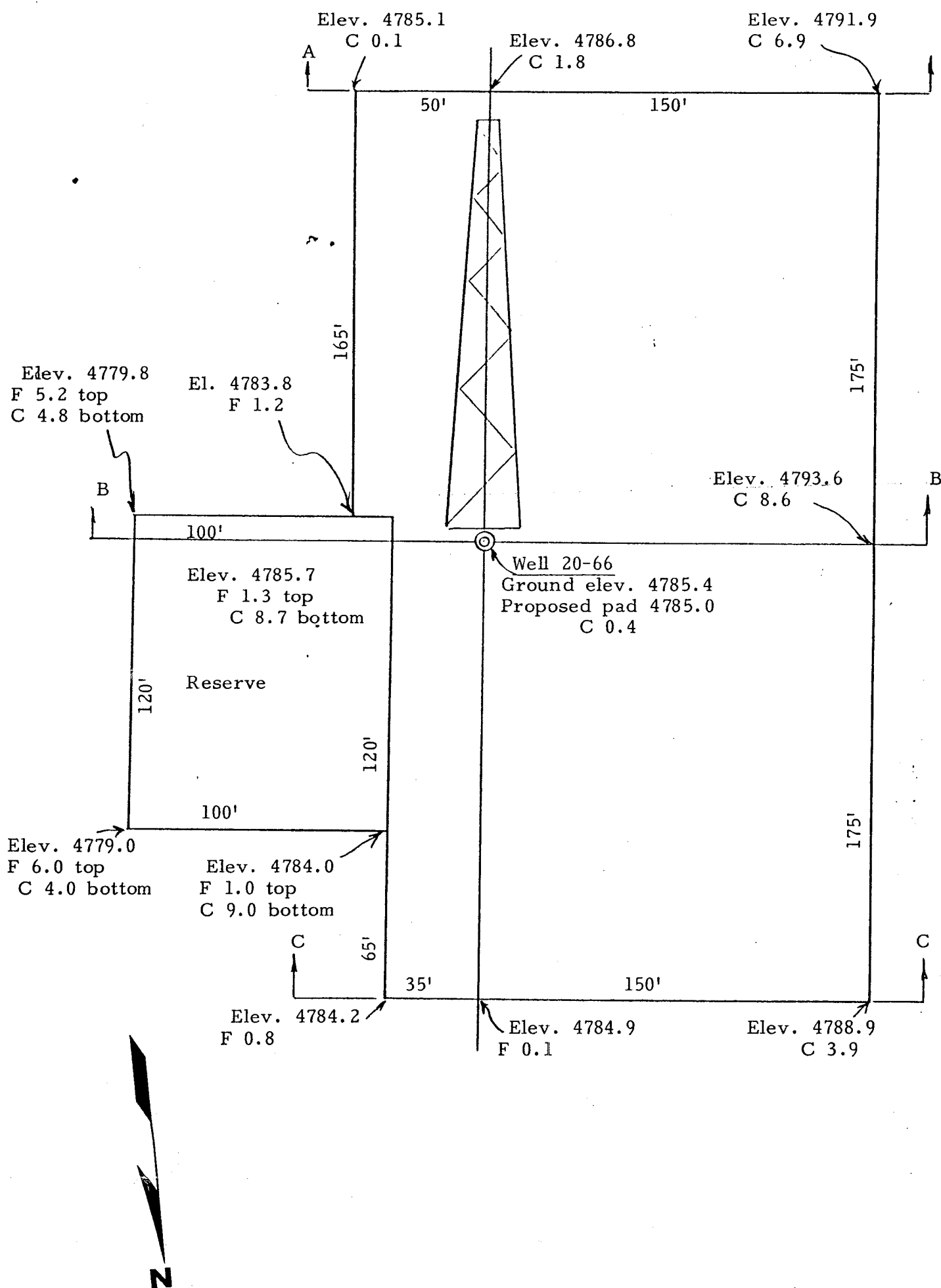


RATHERFORD UNIT (2 - 303-565-9099
801-661-3434

CORTEZ DISTRICT OFFICE - 303-565-3426



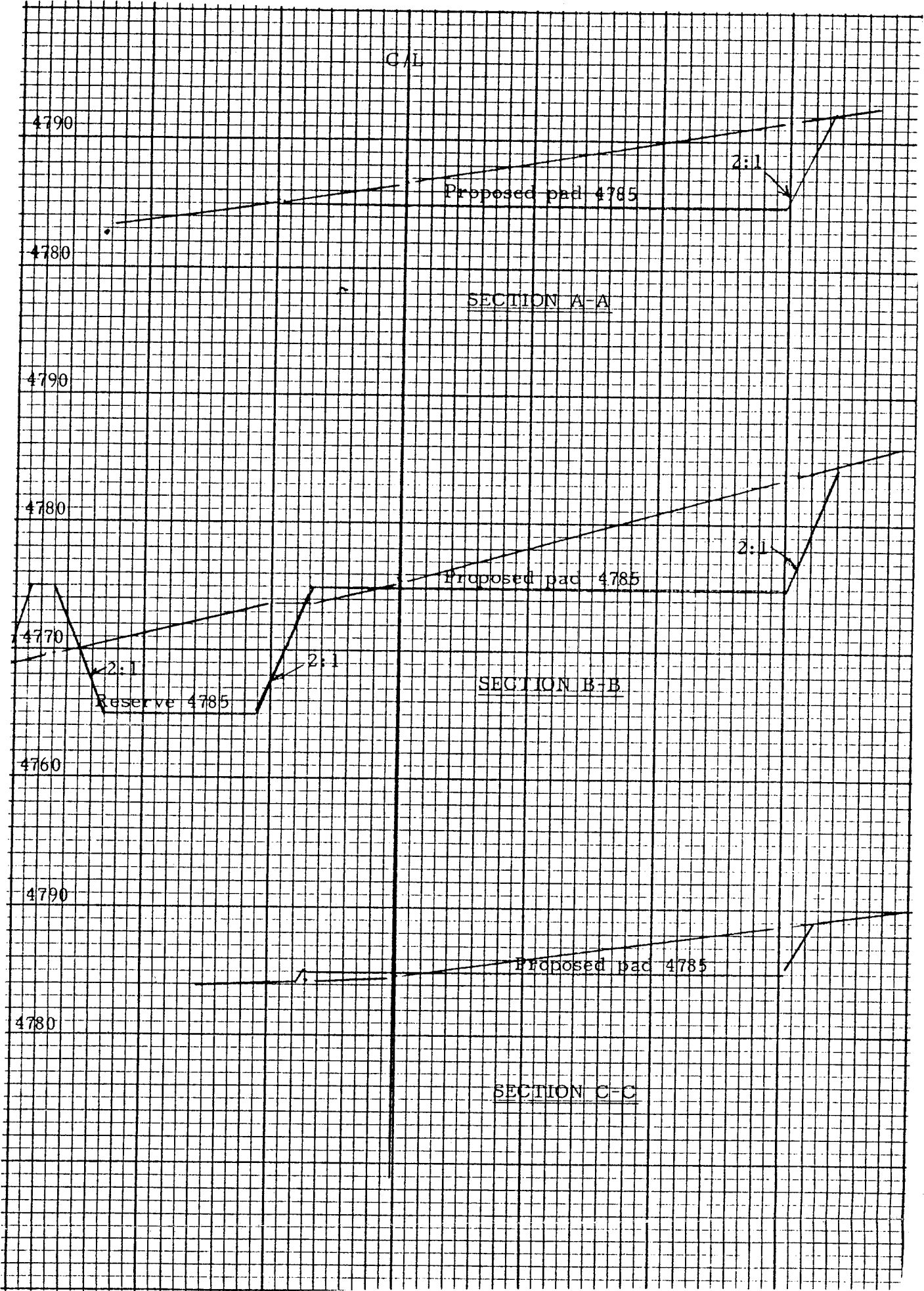
NO.	REVISION	BY	DATE	CHKD	APP'D
FOR BIDS	PHILLIPS PETROLEUM COMPANY		JA NO.	FILE CODE	
FOR APPR	BARTLESVILLE, OKLAHOMA		AFE NO.	SCALE	
FOR CONST	ROAD MAP		NONE		
DRAWN 2/2/90	RATHERFORD UNIT		DWG NO.		
CHECKED			SH NO.		
APPD					



Scale: 1" = 50'

THOMAS Engineering Inc.

215 N. Linden
Cortez, Colorado
565-4496



THOMAS Engineering Inc.

215 N. Linden
Cortez, Colorado
565-4496

Horizontal scale: 1" = 50'

Vertical scale: 1" = 10'

OPERATOR Phillips Petroleum Co N-0770 DATE 11-09-90

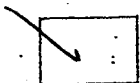
WELL NAME Rathunford 00-06

SEC SWW 00 T 41S R 04E COUNTY Langston

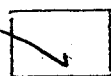
43-037-31590
API NUMBER

Indian (v)
TYPE OF LEASE

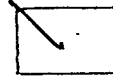
CHECK OFF:



PLAT.



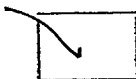
BOND



NEAREST
WELL



LEASE



FIELD

SLBM



POTASH OR
OIL SHALE

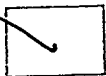
PROCESSING COMMENTS:

1990 P.O.O. approved 7-08-90

Water Permit 09-09 (+90-09-01)

APPROVAL LETTER:

SPACING:



R615-2-3

Rathunford
UNIT



R615-3-2



N/A
CAUSE NO. & DATE



R615-3-3

STIPULATIONS:

CC: BIA

PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

☐ Well File

☐ Suspense

☐ Other

(Location) Sec ___ Twp ___ Rng ___
(API No.) _____

(Return Date) _____
(To - Initials) _____

1. Date of Phone Call: 12-3-90 Time: 11:40

2. DOGM Employee (name) F.R. MARTINEZ (Initiated Call ☒)
Talked to:

Name Ed Haseley (Initiated Call ☐) - Phone No. ()

of (Company/Organization) Phillips Peto Co

3. Topic of Conversation: H2S requirements on drilling permit. Contingency plan.

4. Highlights of Conversation: H2S plan being written by drilling Dept. will forward a copy to us as soon as it is completed.
JAM.

H2S has not shown up in the past, but they are seeing some now on some wells.



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

December 3, 1990

Phillips Petroleum Company
152 N. Durbin, 2nd Floor
Casper, Wyoming 82601

Gentlemen:

Re: Ratherford 20-66 - SW NW Sec. 20, T. 41S, R. 24E - San Juan County, Utah
1369' FNL, 1221' FWL

Approval to drill the referenced well is hereby granted in accordance with Section 40-6-18, Utah Code Annotated, as amended 1983; and predicated on Rule R615-2-3, Oil and Gas Conservation General Rules.

In addition, the following actions are necessary to fully comply with this approval:

1. Spudding notification within 24 hours after drilling operations commence.
2. Submittal of an Entity Action Form within five working days following spudding and whenever a change in operations or interests necessitates an entity status change.
3. Submittal of the Report of Water Encountered During Drilling, Form 7.
4. Prompt notification if it is necessary to plug and abandon the well. Notify R. J. Firth, Associate Director, (Office) (801) 538-5340, (Home) 571-6068, or Jim Thompson, Lead Inspector, (Home) 298-9318.
5. Compliance with the requirements of Rule R615-3-20, Gas Flaring or Venting, Oil and Gas Conservation General Rules.

Page 2
Phillips Petroleum Company
Ratherford 20-66
December 3, 1990

6. Prior to commencement of the proposed drilling operations, plans for facilities for disposal of sanitary wastes at the drill site shall be submitted to the local health department. These drilling operations and any subsequent well operations must be conducted in accordance with applicable state and local health department regulations. A list of local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of General Sanitation, telephone (801) 538-6121.
7. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31592.

Sincerely,



R. J. Firth
Associate Director, Oil & Gas

tas
Enclosures
cc: Bureau of Land Management
Bureau of Indian Affairs
J. L. Thompson
we14/1-10

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
DRILLING AND WELL PLUGGING INSPECTION FORM

COMPANY: Phillips COMPANY MAN: Rocky Piernick
WELL NAME: R. H. 20-66 API #: 43-037-31592
QTR/QTR: SW NW SECTION: 20 TWP: 41S RANGE: 24E
CONTRACTOR: Exter 68 PUSHER/DRLR: _____
INSPECTOR: Gleann DATE: 3/17/91 OPERATIONS: Drilling
SPUD DATE: 3/17/91 TOTAL DEPTH: 1683

DRILLING AND COMPLETIONS

____ APD ____ WELL SIGN ____ BOPE ____ RESERVE PIT
____ FLARE PIT ____ BURN PIT ____ H2S ____ BLOOIE LINE
____ SANITATION ____ HOUSEKEEPING ____ VENTED/FLARED

PLUGGING AND ABANDONMENT

PRODUCING FM(S): _____

PLUGS:	TYPE/SIZE	INTERVAL
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

PERFORATIONS: _____

CASING SIZE: _____ PULLED: YES / NO CUT AT: _____

PLUGS TESTED: _____ HOW: _____ WOC: _____

MARKER: _____ SURFACE: _____ PLATE: _____

RECLAMATION:

CONTOURED: _____ RIPPED: _____ REHAB'D: _____

LEGEND: (Y)-YES (P)-PROBLEM (U)-UNKNOWN (BLANK)-NOT APPLICABLE

REMARKS: Drilling Surface

WATER PERMIT OK

DIVISION OF OIL, GAS AND MINING

API NO. 43-037-31592 *del*

SPODDING INFORMATION

NAME OF COMPANY: PHILLIPS PETROLEUM COMPANY

WELL NAME: RATHERFORD 20-66

SECTION SWNW 20 TOWNSHIP 41S RANGE 24E COUNTY SAN JUAN

DRILLING CONTRACTOR EXETER

RIG # 68

SPODDED: DATE 3-17-91

TIME 8:30 a.m.

HOW ROTARY

Set 9 5/8" conductor pipe at
1670'. 350 lead cement w/275
tail testing 12:00 midnight
3/17/91 on blow-out preventor.

DRILLING WILL COMMENCE _____

REPORTED BY ROMAN C. PIERNICK

TELEPHONE # 801-651-3446

DATE 3-20-91 SIGNED TAS



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangertter

Governor

Dee C. Hansen

Executive Director

Dianne R. Nielson, Ph.D.

Division Director

355 West North Temple

3 Triad Center, Suite 350

Salt Lake City, Utah 84180-1203

801-538-5340

April 5, 1991

Mr. F. D. Gorham
Phillips Petroleum Company
P. O. Box 1967
Houston, Texas 77251-1967

Dear Mr. Gorham:

Re: Request for Completed Entity Action Form *del*
Ratherford 20-66 - SWNW Sec. 20, T. 41S, R. 24E - San Juan County, Utah

This is written to remind you that all well operators are responsible for sending an Entity Action Form to the Division of Oil, Gas and Mining within five working days of spudding a new well. This office was notified that your company spudded the Ratherford 20-66, API Number 43-037-31592, on March 17, 1991. At this time, we have not received an Entity Action Form for this well.

Please review the instructions on the back of the enclosed form. Make sure you choose the proper Action Code to show whether the well will be a single well with its own sales facilities (Code A), a well being added to an existing group of wells having the same tank battery and common division of royalty interest (Code B - show existing Entity Number to which well should be added), or a well being drilled in the participating area of a properly designated unit (Code B). Complete the form and return it to us by April 17, 1991.

Your attention to this matter is appreciated. If we can be of assistance to you, please feel free to call Lisha Romero at the above number.

Sincerely,

Don Staley
Administrative Supervisor

lcr

Enclosure

cc: R. J. Firth

File

WE66/17

an equal opportunity employer

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
ENTITY ACTION FORM - FORM 6

OPERATOR PHILLIPS PETROLEUM COMPANY
ADDRESS P. O. BOX 1967
HOUSTON, TX 77251-1967

OPERATOR ACCT. NO. N 0772

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
B	06280		43-037-31589	RATHERFORD UNIT #13-14	SW SW	13	41S	23 24E	San Juan	1/17/91	1/17/91
WELL 1 COMMENTS: New Drilling Well <i>(Entity assignments made 4-26-91. JFM)</i>											
B	06280		43-037-31593	RATHERFORD UNIT #24-32	SW NE	24	41S	23E	San Juan	2/28/91	2/28/91
WELL 2 COMMENTS: New Drilling Well											
B	06280		43-037-31592	RATHERFORD UNIT #20-66	SW NW	20	41S	24E	San Juan	3/17/91	3/17/91
WELL 3 COMMENTS: New Drilling Well											
B	06280		43-037-31590	RATHERFORD UNIT #20-67	NE SW	20	41S	24E	San Juan	4/2/91	4/2/91
WELL 4 COMMENTS: New Drilling Well											
B	06280		43-037-31591	RATHERFORD UNIT #20-68	NW SW	20	41S	24E	San Juan	4/20/91	4/20/91
WELL 5 COMMENTS: New Drilling Well											

ACTION CODES (See instructions on back of form)

- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

RECEIVED

APR 24 1991

DIVISION OF
OIL GAS & MINING

Jane Mitchell J. F. Mitchell
Signature

Regulatory/Compliance Dir. 4/22/91
Title Date

Phone No. (713) 669-3509

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ DRY ☐ Other _____

b. TYPE OF COMPLETION:

NEW WELL ☒

WORK OVER ☐

DEEP-EN ☐

PLUG BACK ☐

DIFF. RENVR. ☐

Other _____

2. NAME OF OPERATOR

Phillips Petroleum Company

3. ADDRESS OF OPERATOR

5525 Hwy 64 NBU 3004, Farmington, NM 87401

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*

At surface 1221' FWL & 1369' FNL (SW/NW)

At top prod. interval reported below Same as above

At total depth Same as above

14. PERMIT NO.

DATE ISSUED

43-037-31592

JUN 03 1991

DIVISION OF
OIL GAS & MINING

5. LEASE DESIGNATION AND SERIAL NO.

14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Navajo Tribal

7. UNIT AGREEMENT NAME

SW-I-4192

8. FARM OR LEASE NAME

Ratherford

9. WELL NO.

20-66

10. FIELD AND POOL, OR WILDCAT

Greater Aneth

11. SEC. T., R., M., OR BLOCK AND SURVEY OR AREA

Sec. 20-T41S-R24E

12. COUNTY OR PARISH

San Juan

13. STATE

UT

15. DATE SPUDDED

3/17/91

16. DATE T.D. REACHED

3-31-91

17. DATE COMPL. (Ready to prod.)

4-23-91

18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*

4785'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD

5772

21. PLUG, BACK T.D., MD & TVD

5772

22. IF MULTIPLE COMPL., HOW MANY*

23. INTERVALS DRILLED BY

ROTARY TOOLS

X

CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

5549' - 5623' Desert Creek

25. WAS DIRECTIONAL SURVEY MADE

NO

26. TYPE ELECTRIC AND OTHER LOGS RUN

GR/CCL CBL/VDL

DUAL INDUCTION-SSL, REPORT FORMATION TESTER
COMP. NEUTRON LITHO DENSITY, BOREHOLE COMP SONIC.

27. WAS WELL CORED

NO

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	61#, K-55	131'	17-1/2"	125 Sx C1 B	
9-5/8"	36#, J-55	1670'	12-1/4"	350 Sx C1 B, 275 Sx C1 B,	100 Sx C1 B
7"	20, 23, 26#	5772'	8-3/4"	1000 Sx 35/65 Poz, 200 Sx	C1 G

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
--	--	--	--	--

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8"	5623'	

31. PERFORATION RECORD (Interval, size and number)

5549'-5565' 2 SPF, 4" HSC, 32 Shots
5584'-5623' 2 SPF, 4" HSC, 78 Shots

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5549'-5623'	Pmpd 100 Gals 15% HCL into each foot of perfs.

33.* PRODUCTION

DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)				WELL STATUS (Producing or shut-in)	
4-23-91		Pumping with Beam Pump				Producing	
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
4-28-91	24		→	84	81	3	964
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
34	28	→	84	81	3		

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

Sold

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

None

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

L. E. Robinson

TITLE

Sr. Drlg. & Prod. Engr.

DATE

5-20-91

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
<p>Distribution:</p> <p>5 - BLM, Farmington</p> <p>2 - Utah, Div. of O&G&M</p> <p>1 - The Navajo Nation</p> <p>1 - R. C. Arnim (r) G. R. Young</p> <p>1 - D. C. Gill</p> <p>1 - V. S. Shaw</p> <p>1 - F. D. Caudle</p> <p>1 - T. V. Rankin</p> <p>1 - W. H. Smith</p> <p>1 - N. Anstine</p> <p>1 - P. J. Konkell</p> <p>1 - Texaco</p> <p>1 - Chieftain</p>				Shinarump	2375'	
				DeChelly	2643'	
				Hermosa	4565'	
				Ismay	5403'	
				Gothic	5541'	
				Desert Creek	5553'	
			<p>1 - Mobil Oil</p> <p>1 - PPCo, Houston</p> <p>1 - PPCo, Farmington</p> <p>1 - Gale Yarrow</p>			

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*

(See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ DRY ☐ Other ☐

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. REVR. ☐ Other ☐

2. NAME OF OPERATOR

Phillips Petroleum Company

3. ADDRESS OF OPERATOR

5525 Hwy 64 NBU 3004, Farmington, NM 87401

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)

At surface 1221' FWL & 1369' FNL (SW/NW)

At top prod. interval reported below Same as above

At total depth Same as above

RECEIVED

JUN 14 1991

DIVISION OF
OIL GAS & MINING

5. LEASE DESIGNATION AND SERIAL NO.

14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Navajo Tribal

7. UNIT AGREEMENT NAME

SW-I-4192

8. FARM OR LEASE NAME

Ratherford

9. WELL NO.

20-66

10. FIELD AND POOL, OR WILDCAT

Greater Aneth

11. SEC. T., R., M., OR BLOCK AND SURVEY OR AREA

Sec. 20-T41S-R24E

12. COUNTY OR PARISH

San Juan

13. STATE

UT

15. DATE SPUDDED 3/17/91 16. DATE T.D. REACHED 3-31-91 17. DATE COMPL. (Ready to prod.) 4-23-91 18. ELEVATIONS (OF, RKB, RT, GR, ETC.)* 4785' 19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD 5772 21. PLUG, BACK T.D., MD & TVD 5772 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY 24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 5549' - 5623' Desert Creek 25. WAS DIRECTIONAL SURVEY MADE NO

26. TYPE ELECTRIC AND OTHER LOGS RUN

GR/CCL CBL/VDL

27. WAS WELL CORRED NO

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	61#, K-55	131'	17-1/2"	125 Sx C1 B	
9-5/8"	36#, J-55	1670'	12-1/4"	350 Sx C1 B, 275 Sx C1 B,	100 Sx C1 B
7"	20,23,26#	5772'	8-3/4"	1000 Sx 35/65 Poz, 200 Sx	C1 G

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
--	--	--	--	--	2-7/8"	5623'	

31. PERFORATION RECORD (Interval, size and number)

5549'-5565' 2 SPF, 4" HSC, 32 Shots
5584'-5623' 2 SPF, 4" HSC, 78 Shots

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5549'-5623'	Pmpd 100 Gals 15% HCL into each foot of perms.

33.* PRODUCTION

DATE FIRST PRODUCTION 4-23-91 PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Pumping with Beam Pump WELL STATUS (Producing or shut-in) Producing

DATE OF TEST 4-28-91 HOURS TESTED 24 CHOKER SIZE PRODN. FOR TEST PERIOD 84 OIL—BBL. 81 GAS—MCF. 3 WATER—BBL. 964 GAS-OIL RATIO

FLOW. TUBING PRESS. 34 CASING PRESSURE 28 CALCULATED 24-HOUR RATE 84 GAS—MCF. 81 WATER—BBL. 3 OIL—BBL. 964

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

Sold

35. LIST OF ATTACHMENTS

None

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available data.

SIGNED L. E. Robinson

TITLE Sr. Drlg. & Prod. Engr.

BY DATE 5-20-91

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):				38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	MEAS. DEPTH	TOP TRUE VERT. DEPTH
Distribution: 5 - BLM, Farmington 2 - Utah, Div. of O&G&M 1 - The Navajo Nation 1 - R. C. Arnim (r) G. R. Young 1 - D. C. Gill 1 - V. S. Shaw 1 - F. D. Caudle 1 - T. V. Rankin 1 - W. H. Smith 1 - N. Anstine 1 - P. J. Konkell 1 - Texaco 1 - Chieftain			1 - Mobil Oil 1 - PPCo, Houston 1 - PPCo, Farmington 1 - Gale Yarrow	Shinarump DeChelly Hermosa Ismay Gothic Desert Creek	2375' 2643' 4565' 5403' 5541' 5553'	



PHILLIPS PETROLEUM COMPANY

HOUSTON, TEXAS 77251-1967
BOX 1967

EXPLORATION AND PRODUCTION GROUP

BELLAIRE, TEXAS
6330 WEST LOOP SOUTH
PHILLIPS BUILDING

September 18, 1991

Utah Division of Oil, Gas & Mining
Attn: Vicki Carney
355 W. North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Phillips, Ratherford #20-66
Sec. 20-T41S-R24E
San Juan County, Utah

43-037-315-92

POW

Please find enclosed the following logs:

- 1 Compensated Neutron-Litho-Density ✓
- 1 Borehole Compensated Sonic Log ✓
- 1 Dual Induction - SFL ✓
- 1 Repeat Formation Tester ✓
- 1 Mudlog ✓

Please sign one copy of this transmittal and return. Thank you.

Debbie Reed
Geological Clerk

Received By: WLC

Date: 9-25-91

RECEIVED

SEP 24 1991

DIVISION OF
OIL GAS & MINING

STATE OF UTAH
DIVISION OF OIL, GAS AND MININGPage 1 of 10

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

P J KONKEL
PHILLIPS PETROLEUM COMPANY
5525 HWY 64 NBU 3004
FARMINGTON NM 87401

RECEIVED

AUG 16 1993

ACCOUNT NUMBER: N0772

REPORT PERIOD (MONTH/YEAR):

6 / 93

DIVISION OF
OIL, GAS & MININGAMENDED REPORT ☐ (Highlight Changes)

Well Name			Producing Zone	Well Status	Days Oper	Production Volumes		
API Number	Entity	Location				OIL(BBL)	GAS(MCF)	WATER(BBL)
#21-23								
4303713754	06280	41S 24E 21	DSCR	POW	29	1374	883	58
#3-44								
4303715031	06280	41S 24E 3	DSCR	POW	30	111	94	2905
#3-14								
4303715124	06280	41S 24E 3	DSCR	POW	30	67	23	302
#9-12								
4303715126	06280	41S 24E 9	DSCR	POW	30	112	654	17363
#9-14								
4303715127	06280	41S 24E 9	DSCR	POW	30	201	315	423
#28-12								
4303715336	06280	41S 24E 28	PRDX	POW	29	112	47	2428
#29-12								
4303715337	06280	41S 24E 29	PRDX	POW	29	56	0	672
#29-32								
4303715339	06280	41S 24E 29	DSCR	POW	29	1402	287	2224
#29-34								
4303715340	06280	41S 24E 29	DSCR	POW	29	757	48	0
#30-32								
4303715342	06280	41S 24E 30	DSCR	POW	29	588	1049	3744
#3-12								
4303715620	06280	41S 24E 3	DSCR	POW	30	268	11	363
#9-34								
4303715711	06280	41S 24E 9	DSCR	POW	30	45	46	9800
#10-12								
4303715712	06280	41S 24E 10	DSCR	POW	30	45	23	1088
TOTALS						5138	3480	41370

COMMENTS: Effective July 1, 1993, Phillips Petroleum Company has sold its interest in the
 Ratherford Unit to Mobil Exploration and Producing U.S., Incorporated, P. O. Box
 633, Midland, Texas 79702. Mobil assumed operations on July 1, 1993.

I hereby certify that this report is true and complete to the best of my knowledge.

Date: 8/11/93

Name and Signature: PAT KONKEL

Pat Konkell

Telephone Number: 505 599-3452

19W-21	43-037-15741	14-20-603-353	SEC. 19, T41S, R24E	NE/NW 660' FNL 1860' FWL
19-22	43-037-31046	14-20-603-353	SEC. 19, T41S, R24E	SE/NW 1840' FNL; 1980' FWL
19W-23	43-037-15742	14-20-603-353	SEC. 19, T41S, R24E	NE/SW 2080' FSL; 1860' FWL
19-31	43-037-31047	14-20-603-353	SEC. 19, T41S, R24E	NW/NE 510' FNL; 1980' FEL
19-32	43-037-15743	14-20-603-353	SEC. 19, T41S, R24E	SW/NE 1980' FNL; 1980' FEL
19-33	43-037-31048	14-20-603-353	SEC. 19, T41S, R24E	NW/SE 1980' FSL; 1980' FEL
19-34	43-037-15744	14-20-603-353	SEC. 19, T41S, R24E	SW/SE 660' FSL; 1980' FEL
19W-41	43-037-15745	14-20-603-353	SEC. 19, T41S, R24E	NE/NE 660' FNL; 660' FEL
19-42	43-037-30916	14-20-603-353	SEC. 19, T41S, R24E	SE/NE 1880' FNL, 660' FEL
19W-43	43-037-16420	14-20-603-353	SEC. 19, T41S, R24E	NE/SE 1980' FSL; 760' FEL
19-44	43-037-31081	14-20-603-353	SEC. 19, T41S, R24E	SE/SE 660' FSL; 660' FEL
19-97	43-037-31596	14-20-603-353	SEC. 19, T41S, R24E	2562' FNL, 30' FEL
20-11	43-037-31049	14-20-603-353	SEC. 20, T41S, R24E	NW/NW 500' FNL; 660' FWL
20-12	43-037-15746	14-20-603-353	SEC. 20, T41S, R24E	1980' FNL, 660' FWL
20-13	43-037-30917	14-20-603-353	SEC. 20, T41S, R24E	NW/SW 2140' FSL, 500' FWL
20-14	43-037-15747	14-20-603-353	SEC. 20, T41S, R24E	660' FSL; 660' FWL
20W-21	43-037-16423	14-20-603-353	SEC. 20, T41S, R24E	660' FNL; 1880' FWL
20-22	43-037-30930	14-20-603-353	SEC. 20, T41S, R24E	SE/NW 2020' FNL; 2090' FWL
20W-23	43-037-15748	14-20-603-353	SEC. 20, T41S, R24E	NW/SW 2080; 2120' FWL
20-24	43-037-30918	14-20-603-353	SEC. 20, T41S, R24E	SE/SW 820' FSL; 1820' FWL
20-31	43-037-31050	14-20-603-353	SEC. 20, T41S, R24E	NW/NE 660' FNL; 1880' FEL
20-32	43-037-15749	14-20-603-353	SEC. 20, T41S, R24E	SW/NE 1980' FNL, 1980' FEL
20-33	43-037-30931	14-20-603-353	SEC. 20, T41S, R24E	NW/SE 1910' FSL; 2140' FEL
20-34	43-037-15750	14-20-603-353	SEC. 20, T41S, R24E	660' FSL; 1850' FEL
20W-41	43-037-15751	14-20-603-353	SEC. 20, T41S, R24E	NE/NE 660' FNL; 660' FEL
20-42	43-037-31051	14-20-603-353	SEC. 20, T41S, R24E	SE/NE 1980' FNL; 660' FEL
20W-43	43-037-16424	14-20-603-353	SEC. 20, T41S, R24E	2070' FSL; 810' FEL
20-44	43-037-30915	14-20-603-353	SEC. 20, T41S, R24E	SE/SE 620' FSL; 760' FEL
21-11	43-037-31592	14-20-603-353	SEC. 20, T41S, R24E	SW/NW 1221' FWL; 1369' FNL
21-12	43-037-31052	14-20-603-355	SEC. 21, T41S, R24E	NW/NW 660' FNL; 660' FWL
21-13	43-037-15752	14-20-603-355	SEC. 21, T41S, R24E	2080' FNL; 660' FWL
21-14	43-037-30921	14-20-603-355	SEC. 21, T41S, R24E	NW/SW 2030' FSL; 515' FWL
21W-21	43-037-15753	14-20-603-355	SEC. 21, T41S, R24E	SW/SW 660' FSL; 460' FWL
21-32	43-037-16425	14-20-603-355	SEC. 21, T41S, R24E	NE/NW 660' FNL; 2030' FWL
21-33	43-037-15755	14-20-603-355	SEC. 21, T41S, R24E	SW/NE 1880' FNL; 1980' FEL
21-34	NA	14-20-603-355	SEC. 21, T41S, R24E	2000' FSL; 1860' FEL
21W-41	43-037-15756	14-20-603-355	SEC. 21, T41S, R24E	SW/SE 660' FSL; 1980' FEL
21W-43	43-037-16426	14-20-603-355	SEC. 21, T41S, R24E	660' FNL; 810' FEL
24-11	43-037-16427	14-20-603-355	SEC. 21, T41S, R24E	NE/NE 1980' FSL; 660' FEL
24W-21	43-037-15861	14-20-603-247A	SEC. 24, T41S, R24E	510' FNL; 810' FWL
24W-23	43-037-16429	14-20-603-247	SEC. 24, T41S, R24E	4695' FSL; 3300' FEL
24W-41	43-037-16430	14-20-603-247	SEC. 24, T41S, R24E	2080' FSL; 660' FEL
24-32	43-037-15862	14-20-603-247A	SEC. 24, T41S, R24E	NW/NE 560' FNL; 1830' FEL
24-41	43-037-31593	14-20-603-247A	SEC. 24, T41S, R24E	SW/NE 2121' FNL; 1846' FEL
24W-42	43-037-31132	14-20-603-247A	SEC. 24, T41S, R24E	NE/NE 660' FNL; 710' FEL
28-11	43-037-15863	14-20-603-247A	SEC. 24, T41S, R24E	660' FSL; 1980' FNL
28-12	43-037-30446	14-20-603-409	SEC. 28, T41S, R24E	NW/NW 520' FNL; 620' FWL
29-11	43-037-15336	14-20-603-409B	SEC. 28, T41S, R24E	SW/SE/NW 2121' FNL; 623' FWL
29W-21	43-037-31053	14-20-603-407	SEC. 29, T41S, R24E	NW/NW 770' FNL; 585' FWL
29-22	43-037-16432	14-20-603-407	SEC. 29, T41S, R24E	NE/NW 667' FNL; 2122' FWL
29W-23	43-037-31082	14-20-603-407	SEC. 29, T41S, R24E	SE/NW 2130' FNL; 1370' FWL
29-31	43-037-15338	14-20-603-407	SEC. 29, T41S, R24E	NE/SW 1846' FSL; 1832' FWL
29-32	43-037-30914	14-20-603-407	SEC. 29, T41S, R24E	NW/NE 700' FNL; 2140' FEL
29-33	43-037-15339	14-20-603-407	SEC. 29, T41S, R24E	1951' FNL; 1755' FEL
29-34	43-037-30932	14-20-603-407	SEC. 29, T41S, R24E	NW/SE 1860' FSL; 1820' FEL
29W-41	43-037-15340	14-20-603-407	SEC. 29, T41S, R24E	817' FSL; 2096' FEL
29W-42	43-037-16433	14-20-603-407	SEC. 29, T41S, R24E	557' FNL; 591' FEL
29W-43	43-037-30937	14-20-603-407	SEC. 29, T41S, R24E	SE/NE 1850' FNL; 660' FEL
30-21W	43-037-16434	14-20-603-407	SEC. 29, T41S, R24E	NE/SE 1980' FSL; 660' FEL
30-32	43-037-16435	14-20-603-407	SEC. 30, T41S, R24E	660' FNL; 1920' FWL
30W-41	43-037-15342	14-20-603-407	SEC. 30, T41S, R24E	SW/NE 1975' FNL; 2010' FEL
3-34	43-037-15343	14-20-603-407	SEC. 30, T41S, R24E	NE/NE 660' FNL; 660' FEL
12-43	NA 4303715711	NA 14206034043	NA Sec. 9, T. 41S, R. 24E	NA SW/SE 660' FSL 1980' FEL
12W-31	43-307-31202	14-20-603-246	SEC. 12, T41S, R23E	2100' FSL; 660' FEL
13W-24	43-037-15847	14-20-603-246	SEC. 12, T41S, R23E	661' FNL; 1981' FEL
15W-23	43-037-15853	14-20-603-247	SEC. 13, T41S, R23E	SE/SW 660' FSL; 3300' FEL
17-24	43-037-16412	14-20-603-355	SEC. 15, T41S, R24E	2140' FSL; 1820' FWL
18-13	43-037-31044	14-20-603-353	SEC. 17, T41S, R24E	SE/SW 720' FSL; 1980' FWL
18W-32	43-037-15734	14-20-603-353	SEC. 18, T41S, R24E	NW/NW 1980' FSL; 500' FWL
20-68	43-037-15736	14-20-603-353	SEC. 18, T41S, R24E	SW/NE 2140' FNL; 1830' FEL
21-23	43-037-31591	14-20-603-353	SEC. 20, T41S, R24E	NW/SW 1276' FWL; 1615' FSL
28W-21	43-037-13754	14-20-603-355	SEC. 21, T41S, R24E	NE/SW 1740' FSL 1740' FWL
28W-21	43-037-16431	14-20-603-409	SEC. 29, T41S, R24E	660' FNL; 2022' FWL

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

SUNDRY NOTICES AND REPORTS ON WELLS (Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)		5. LEASE DESIGNATION & SERIAL NO.
1. <input type="checkbox"/> OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER		6. IF INDIAN, ALLOTTEE OR TRIBE NAME NAVAJO TRIBAL
2. NAME OF OPERATOR MOBIL OIL CORPORATION		7. UNIT AGREEMENT NAME RATHERFORD UNIT
3. ADDRESS OF OPERATOR P. O. BOX 633 MIDLAND, TX 79702		8. FARM OR LEASE NAME
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface At proposed prod. zone		9. WELL NO.
10. FIELD AND POOL OR WILDCAT GREATER ANETH		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
14. API NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY SAN JUAN
		13. STATE UTAH

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐

FRACTURE TREAT ☐

SHOOT OR ACIDIZE ☐

REPAIR WELL ☐

(Other) ☐

PULL OR ALTER CASING ☐

MULTIPLE COMPLETE ☐

ABANDON ☐

CHANGE PLANS ☐

APPROX. DATE WORK WILL START _____

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐

FRACTURE TREATMENT ☐

SHOOTING OR ACIDIZING ☐

(Other) CHANGE OF OPERATOR ☐

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

REPAIRING WELL ☐

ALTERING CASING ☐

ABANDONMENT* ☐

DATE OF COMPLETION _____

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

* Must be accompanied by a cement verification report.

AS OF JULY1, 1993, MOBIL OIL CORPORATION IS THE OPERATOR OF THE RATHERFORD UNIT.
ATTACHED ARE THE INDIVIDUAL WELLS.

18. I hereby certify that the foregoing is true and correct

SIGNED

Shirley Todd

TITLE

ENV. & REG TECHNICIAN

DATE

9-8-93

(This space for Federal or State office use)

APPROVED BY _____

TITLE _____

DATE _____

CONDITIONS OF APPROVAL, IF ANY:

See Instructions On Reverse Side

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

Page 1 of 1

MONTHLY OIL AND GAS DISPOSITION REPORT

OPERATOR NAME AND ADDRESS:

BRIAN BERRY

M E P N A MOBIL

POB 219031 1807A RENTWY P.O. DRAWER 6

DALLAS TX 75221-9031 CORTEZ, CO. 81321

UTAH ACCOUNT NUMBER: N7370

REPORT PERIOD (MONTH/YEAR): 7 / 93

AMENDED REPORT ☐ (Highlight Changes)*931006 updated.
Lee

ENTITY NUMBER	PRODUCT	GRAVITY	BEGINNING INVENTORY	VOLUME PRODUCED	DISPOSITIONS				ENDING INVENTORY
		BTU			TRANSPORTED	USED ON SITE	FLARED/VENTED	OTHER	
05980	OIL			177609	177609	0			
	GAS			72101	66216	5885			
11174	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
TOTALS				249710	243825	5885			

COMMENTS:

PLEASE NOTE ADDRESS change. MOBIL ~~ASU~~ PRODUCTION REPORTS
 Will be compiled and sent from the Cortez, Co. office
 IN THE FUTURE.

I hereby certify that this report is true and complete to the best of my knowledge.

Name and Signature:

Lewell B Sheffield

Date:

9/5/93

Telephone Number:

303.865.2212
244.658.2528

Sept 29, 1993

TO: Lisha Cordova - Utah Mining
Oil & Gas

FROM: Janice Easley
BLM Farmington, NM
505 599-6355

Here is copy of Rutherford Unit
Successor Operator,

4 pages including this one.

Like Ratherford Unit (GC)

RECEIVED
BLM

JUL 27 11:44

070 FARMINGTON, NM

Navajo Area Office
P. O. Box 1060
Gallup, New Mexico 87305-1060

ARES/543

JUL 28 1993

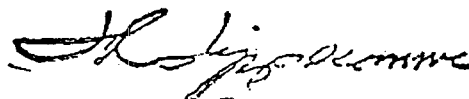
Mr. G. D. Cox
Mobil Exploration and
Producing North America, Inc.
P. O. Box 633
Midland, Texas 79702

Dear Mr. Cox:

Enclosed for your information and use is the approved Designation of Operator between the Phillips Petroleum Company and Mobil Exploration and Producing North America, Inc. for the Ratherford Unit.

Please note that all other concerned parties will be furnished their copy of the approved document.

Sincerely,



ACTING Area Director

Enclosure

cc: Bureau of Land Management, Farmington District Office w/enc.
TNN, Director, Minerals Department w/enc.

MINERALS DIVISION
1993
JUL 28
3
2
ALL SUPPLY
FILE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

RECEIVED
BLM

DESIGNATION OF OPERATOR

Phillips Petroleum Company is, on the records of the Bureau of Indian Affairs, operator of the Ratherford Unit, ^{27 JUL 1993}

AREA OFFICE: Window Rock, Arizona
LEASE NO: Attached hereto as Exhibit "A"

070 FARMINGTON, NM

and, pursuant to the terms of the Ratherford Unit Agreement, is resigning as Unit Operator effective July 1, 1993, and hereby designates

NAME: Mobil Exploration and Producing North America Inc., duly elected pursuant to the terms of the Ratherford Unit Agreement,

ADDRESS: P. O. Box 633, Midland, Texas 79702
Attn: G. D. Cox

as Operator and local agent, with full authority to act on behalf of the Ratherford Unit lessees in complying with the terms of all leases and regulations applicable thereto and on whom the authorized officer may serve written or oral instructions in securing compliance with the Operating Regulations (43 CFR 3160 and 25 CFR 211 and 212) with respect to (described acreage to which this designation is applicable):

Attached hereto as Exhibit "A"

Bond coverage under 25 CFR 211, 212 or 225 for lease activities conducted by the above named designated operator is under Bond Number 05202782 (attach copy). Evidence of bonding is required prior to the commencement of operations.

It is understood that this designation of operator does not relieve any lessee of responsibility for compliance with the terms of the leases and the Operating Regulations. It is also understood that this designation of operator does not constitute an assignment of any interest in the leases.

In case of default on the part of the designated operator, the lessees will make full and prompt compliance with all regulations, lease terms, stipulations, or orders of the Secretary of the Interior or his representative.

Attached is the appropriate documentation relevant to this document.

The designated operator agrees to promptly notify the authorized officer of any change in the operatorship of said Ratherford Unit.

Phillips Petroleum Company

June 17, 1993

By: M. B. [Signature]
Attorney-in-Fact

Mobil Exploration and Producing
North America Inc.

June 11, 1993

By: B. D. Martiny
Attorney-in-Fact B.D. MARTINY

[Signature] ACTING AREA DIRECTOR
APPROVED BY TITLE DATE
7/9/93

APPROVED PURSUANT, TO SECRETARIAL REDELEGATION ORDER 209 DM 8 AND 230 DM 3.

This form does not constitute an information collection as defined by 44 U.S.C. 3502 and therefore does not require OMB approval.

EXHIBIT "A"

ATTACHED TO AND MADE A PART OF DESIGNATION OF SUCCESSOR OPERATOR, RATHERFORD UNIT

EXHIBIT "C"

Revised as of September 29, 1992
SCHEDULE OF TRACT PERCENTAGE PARTICIPATION

<u>Tract Number</u>	<u>Description of Land</u>	<u>Serial Number and Effective Date of Lease</u>	<u>Tract Percentage Participation</u>
1	S/2 Sec. 1, E/2 SE/4 Sec. 2, E/4 Sec. 11, and all of Sec. 12, T-41-S, R-23-E, S.L.M. San Juan County, Utah	14-20-603-246-A Oct. 5, 1953	11.0652565
2	SE/4 and W/2 SW/4 Sec. 5, the irregular SW/4 Sec. 6, and all of Sec. 7 and 8, T-41-S, R-24-E, San Juan County, Utah	14-20-603-368 Oct. 26, 1953	14.4159942
3	SW/4 of Sec. 4, T-41-S, R-24-E, San Juan County, Utah	14-20-603-5446 Sept. 1, 1959	.5763826
4	SE/4 Sec. 4, and NE/4 Sec. 9, T-41-S, R-24-E, San Juan County, Utah	14-20-603-4035 March 3, 1958	1.2587779
5	SW/4 of Sec. 3, T-41-S, R-24-E, S.L.M., San Juan County, Utah	14-20-603-5445 Sept. 3, 1959	.4667669
6	NW/4 of Sec. 9, T-41-S, R-24-E, S.L.M., San Juan County, Utah	14-20-603-5045 Feb. 4, 1959	1.0187043
7	NW/4, W/2 NE/4, and SW/4 Sec. 10, SE/4 Sec. 9, T-41-S, R-24-E, San Juan County, Utah	14-20-603-4043 Feb. 18, 1958	3.5097575
8	SW/4 Sec. 9, T-41-S, R-24-E, S.L.M. San Juan County, Utah	14-20-603-5046 Feb. 4, 1959	1.1141679
9	SE/4 Sec. 10 and S/2 SW/4 Sec. 11 T-41-S, R-24-E, San Juan County, Utah	14-20-603-4037 Feb. 14, 1958	2.6186804
10	All of Sec. 13, E/2 Sec. 14, and E/2 SE/4 and N/2 Sec. 24, T-41-S, R-23-E, S.L.M., San Juan County, Utah	14-20-603-247-A Oct. 5, 1953	10.3108861
11	Sections 17, 18, 19 and 20, T-41-S, R-24-E, San Juan County Utah	14-20-603-353 Oct. 27, 1953	27.3389265
12	Sections 15, 16, 21, and NW/4, and W/2 SW/4 Sec. 22, T-41-S, R-24-E, San Juan County, Utah	14-20-603-355 Oct. 27, 1953	14.2819339
13	W/2 Section 14, T-41-S, R-24-E, San Juan County, Utah	14-20-603-370 Oct. 26, 1953	1.8500847
14	N/2 and SE/4, and E/2 SW/4 Sec. 29, NE/4 and E/2 SE/4 and E/2 W/2 Irregular Sec. 30, and E/2 NE/4 Sec. 32, T-41-S, R-24-E, San Juan County, Utah	14-20-603-407 Dec. 10, 1953	6.9924969
15	NW/4 Sec. 28, T-41-S, R24-E San Juan County, Utah	14-20-603-409 Dec. 10, 1953	.9416393
16	SE/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6504 July 11, 1961	.5750254
17	NE/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6505 July 11, 1961	.5449292
18	NW/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6506 July 11, 1961	.5482788
19	NE/4 Sec. 4, T-41-S, R24-E San Juan County, Utah	14-20-0603-7171 June 11, 1962	.4720628
20	E/2 NW/4 Sec. 4, T-41-S, R-24-E San Juan County, Utah	14-20-0603-7172 June 11, 1962	.0992482

PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

☐ Well File _____☐ Suspense☒ Other

(Return Date) _____

OPERATOR CHANGE

(Location) Sec _____ Twp _____ Rng _____

(To - Initials) _____

(API No.) _____

1. Date of Phone Call: 10-6-93 : Time: 9:302. DOGM Employee (name) L. CORDOVA (Initiated Call ☒
Talked to:Name GLEN COX (Initiated Call ☐ - Phone No. (915)688-2114of (Company/Organization) MOBIL3. Topic of Conversation: OPERATOR CHANGE FROM PHILLIPS TO MOBIL "RATHERFORD UNIT".(NEED TO CONFIRM HOW OPERATOR WANTS THE WELLS SET UP - MEPNA AS PER BIA APPROVALOR MOBIL OIL CORPORATION AS PER SUNDRY DATED 9-8-93?)

4. Highlights of Conversation: _____

MR. COX CONFIRMED THAT THE WELLS SHOULD BE SET UNDER ACCOUNT N7370/MEPNA ASPER BIA APPROVAL, ALSO CONFIRMED THAT PRODUCTION & DISPOSITION REPORTS WILL NOWBE HANDLED OUT OF THEIR CORTEZ OFFICE RATHER THAN DALLAS.MEPNA-PO DRAWER GCORTEZ, CO 81321(303)565-2212*ADDRESS CHANGE AFFECTS ALL WELLS CURRENTLY OPERATED BY MEPNA, CURRENTLYREPORTED OUT OF DALLAS (MCELMO CREEK).

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Routing:

1	REC/47-93
2	DPG/58-93
3	VLC
4	RJE
5	TEC
6	PL

Attach all documentation received by the division regarding this change.
 Initial each listed item when completed. Write N/A if item is not applicable.

- ☒ Change of Operator (well sold) ☐ Designation of Agent
☐ Designation of Operator ☐ Operator Name Change Only

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 7-1-93)

TO (new operator)	<u>M E P N A</u>	FROM (former operator)	<u>PHILLIPS PETROLEUM COMPANY</u>
(address)	<u>PO DRAWER G</u>	(address)	<u>5525 HWY 64 NBU 3004</u>
	<u>CORTEZ, CO 81321</u>		<u>FARMINGTON, NM 87401</u>
	<u>GLEN COX (915)688-2114</u>		<u>PAT KONKEL</u>
	phone <u>(303) 565-2212</u>		phone <u>(505) 599-3452</u>
	account no. <u>N7370</u>		account no. <u>N0772(A)</u>

Well(s) (attach additional page if needed): ***RATHERFORD UNIT (NAVAJO)**

Name: **SEE ATTACHED**	API: <u>43-03731592</u>	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____

OPERATOR CHANGE DOCUMENTATION

- Sec 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form). (Reg. 8-20-93) (6/93 Prod. Rpt. 8-16-93)
- Sec 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form). (Reg. 8-31-93) (Rec'd 9-14-93)
- N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) _____ If yes, show company file number: _____
- Sec 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of Federal and Indian well operator changes should take place prior to completion of steps 5 through 9 below.
- Sec 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 6. Cardex file has been updated for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 7. Well file labels have been updated for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (10-6-93)
- Sec 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

- Lee 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) no (If entity assignments were changed, attach copies of Form 6, Entity Action Form).
- N/A 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

BOND VERIFICATION (Fee wells only)

- Lee 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.
- N/A 2. A copy of this form has been placed in the new and former operators' bond files.
3. The former operator has requested a release of liability from their bond (yes/no) . Today's date 19 . If yes, division response was made by letter dated 19 .

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

- N/A 1. (Rule R615-2-10) The former operator/lessee of any fee lease well listed above has been notified by letter dated 19 , of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.
- N/A 2. Copies of documents have been sent to State Lands for changes involving State leases.

FILMING

- ✓ 1. All attachments to this form have been microfilmed. Date: 11-17 1993.

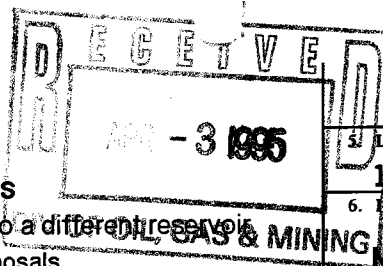
FILING

- Lee 1. Copies of all attachments to this form have been filed in each well file.
- Lee 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

931006 BIA/BM Approved 7-9-93.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT - " for such proposals

5. Lease Designation and Serial No.

14-20-603-353

6. If Indian, Allottee or Tribe Name

Navajo Tribal

7. If Unit or CA, Agreement Designation

Ratherford Unit

8. Well Name and No.

Ratherford 20-66

9. API Well No.

43-037-31592

10. Field and Pool, or exploratory Area

Greater Aneth

11. County or Parish, State

San Juan Utah

SUBMIT IN TRIPLICATE

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator Mobil Exploration & Producing U.S. Inc.
as Agent for Mobil Producing TX & NM Inc.

3. Address and Telephone No.

P.O. Box 633, Midland, TX 79702 915/688-2585

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1221' FWL; 1369' FNL
SEC. 20, T41S, R24E

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent
☒ Subsequent Report
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment
☐ Recompletion
☐ Plugging Back
☐ Casing Repair
☐ Altering Casing
☒ Other workover
☐ Change of Plans
☐ New Construction
☐ Non-Routine Fracturing
☐ Water Shut-Off
☐ Conversion to Injection
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

2-10-95 RU AND NU BOP. POOH WITH TBG. RIH WITH BIT, CSG SCRAPER AND TAG FILL TO PBD OF 5729'.

2-11-95 PERF W/ 4 SPF. DESERT CREEK ZONE FROM 5654-70, 5680-5700'.

2-13-95 SPOT 3 BBLs. 15% ACID ACROSS PERF. ACIDIZED WITH 5000 GALS OF ACID. SWABBED.

2-14-95 TAGGED FIL @ 5701'. TIH W/ BAILER & SCRAPER. BAILED OUT 30' TO 5729'.

2-15-95 TOOH W/ TBG & BAILER. TAG BTM @ 5730'. ND BOP. RD MO.

14. I hereby certify that the foregoing is true and correct

Signed Shirley Roberson

Title ENV & REG TECHNICIAN

Date 3-29-95

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

* See Instruction on Reverse Side

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
 355 West North Temple, 3 Triad, Suite 350, Salt Lake City, UT 84180-1203

Page 22 of 22

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

C/O MOBIL OIL CORP
 M E P N A
 PO DRAWER G
 CORTEZ CO 81321

UTAH ACCOUNT NUMBER: N7370REPORT PERIOD (MONTH/YEAR): 6 / 95AMENDED REPORT ☐ (Highlight Changes)

Well Name			Producing Zone	Well Status	Days Oper	Production Volumes		
API Number	Entity	Location				OIL(BBL)	GAS(MCF)	WATER(BBL)
RATHERFORD 20-67								
4303731590	06280	41S 24E 20	DSCR					
RATHERFORD 20-68								
4303731591	06280	41S 24E 20	DSCR					
RATHERFORD 20-66								
4303731592	06280	41S 24E 20	DSCR					
RATHERFORD 24-32								
4303731593	06280	41S 23E 24	DSCR					
RATHERFORD 19-97								
4303731596	06280	41S 24E 19	DSCR					
RATHERFORD 11-43								
4303731622	06280	41S 23E 11	DSCR					
RATHERFORD 14-41								
4303731623	06280	41S 23E 14	DSCR					
RATHERFORD UNIT 14-31								
4303731717	06280	41S 23E 14	DSCR					
RATHERFORD UNIT 19-13								
4303731719	06280	41S 24E 19	DSCR					
RATHERFORD UNIT 21-24								
4303731720	06280	41S 24E 21	DSCR					
TOTALS								

COMMENTS: _____

I hereby certify that this report is true and complete to the best of my knowledge.

Date: _____

Name and Signature: _____

Telephone Number: _____

PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

☐ Well File _____

☐ Suspense
(Return Date) _____
(To - Initials) _____

☒ Other
OPER NM CHG ☐

(Location) Sec _____ Twp _____ Rng _____
(API No.) _____

1. Date of Phone Call: 8-3-95 Time: _____

2. DOGM Employee (name) L. CORDOVA (Initiated Call ☐)
Talked to:

Name RJ J. FIRTH (Initiated Call ☒) - Phone No. () _____
of (Company/Organization) _____

3. Topic of Conversation: M E P N A / N7370

4. Highlights of Conversation: _____

OPERATOR NAME IS BEING CHANGED FROM M E P N A (MOBIL EXPLORATION AND PRODUCING
NORTH AMERICA INC) TO MOBIL EXPLOR & PROD. THE NAME CHANGE IS BEING DONE AT
THIS TIME TO ALLEVIATE CONFUSION, BOTH IN HOUSE AND AMONGST THE GENERAL PUBLIC.

*SUPERIOR OIL COMPANY MERGED INTO M E P N A 4-24-86 (SEE ATTACHED).

Mobil Oil Corporation

P.O. BOX 5444
DENVER, COLORADO 80217-5444

May 14, 1986

Utah Board of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: R. J. Firth
Associate Director

RECEIVED
MAY 16 1986

DIVISION OF
OIL, GAS & MINING

SUPERIOR OIL COMPANY MERGER

Dear Mr. Firth:

On September 20, 1984, The Superior Oil Company (Superior) became a wholly owned subsidiary of Mobil Corporation. Since January 1, 1985, Mobil Oil Corporation (MOC), another wholly owned subsidiary of Mobil Corporation, has acted as agent for Superior and has operated the Superior-owned properties.

On April 24, 1986, Superior was merged with Mobil Exploration and Producing North America Inc. (MEPNA), which is also a wholly owned subsidiary of Mobil Corporation. MEPNA is the surviving company of the merger.

This letter is to advise you that all properties held in the name of Superior will now be held in the name of MEPNA; and that these properties will continue to be operated by MOC as agent for MEPNA.

Attached is a listing of all wells and a separate listing of injection-disposal wells, Designation of Agent and an organization chart illustrating the relationships of the various companies. If you have any questions or require additional documentation of this merger, please feel free to contact me at the above address or (303) 298-2577.

Very truly yours,



CNE/rd
CNE8661

R. D. Baker
Environmental Regulatory Manager

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Attach all documentation received by the division regarding this change.
 Initial each listed item when completed. Write N/A if item is not applicable.

Routing:

1-LEC	7-PL
2-LWP	8-SJ
3-DTS	9-FILE
4-VLC	
5-RJF	
6-LWP	

- ☐ Change of Operator (well sold) ☐ Designation of Agent
☐ Designation of Operator ☒ Operator Name Change Only

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 8-2-95)

TO (new operator) MOBIL EXPLOR & PROD
 (address) C/O MOBIL OIL CORP
PO DRAWER G
CORTEZ CO 81321
 phone (303) 564-5212
 account no. N7370

FROM (former operator) M E P N A
 (address) C/O MOBIL OIL CORP
PO DRAWER G
CORTEZ CO 81321
 phone (303) 564-5212
 account no. N7370

Well(s) (attach additional page if needed):

Name: ** SEE ATTACHED **	API: <u>037 31592</u>	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____

OPERATOR CHANGE DOCUMENTATION

- N/A 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form).
- N/A 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form).
- N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) _____ If yes, show company file number: _____.
- N/A 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of **Federal and Indian** well operator changes should take place prior to completion of steps 5 through 9 below.
- lec 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (8-3-95)
- LWP 6. Cardex file has been updated for each well listed above. 8-21-95
- LWP 7. Well file labels have been updated for each well listed above. 9-28-95
- lec 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (8-3-95)
- lec 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

- See 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) no (If entity assignments were changed, attach copies of Form 6, Entity Action Form).
- N/A 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

BOND VERIFICATION (Fee wells only)

** No Fee Lease Wells at this time!*

- N/A See 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.
- ___ 2. A copy of this form has been placed in the new and former operators' bond files.
- ___ 3. The former operator has requested a release of liability from their bond (yes/no) _____. Today's date _____ 19____. If yes, division response was made by letter dated _____ 19____.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

- N/A OTS 8/5/95 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19____, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.
- N/A 2. Copies of documents have been sent to State Lands for changes involving **State leases**.

FILMING

- ✓ 1. All attachments to this form have been microfilmed. Date: October 6 1995.

FILING

- ___ 1. Copies of all attachments to this form have been filed in each well file.
- ___ 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

950803 WIC F5/Not necessary!

Ratherford Unit Well #20-66 Horizontal Drilling Procedure

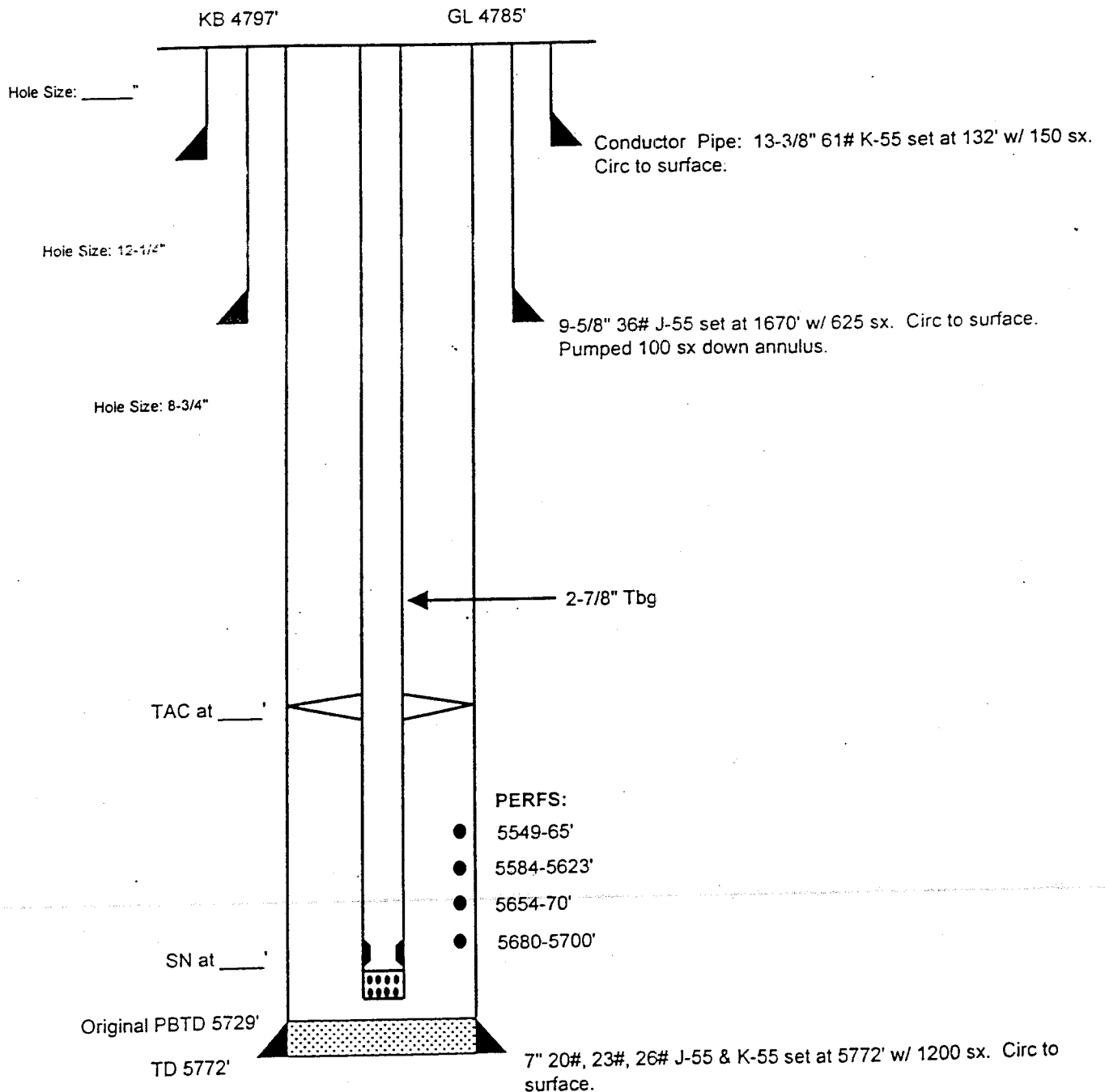
The objective of this procedure is to prepare this wellbore for sidetracking, sidetrack the subject well and drill multilateral short radius horizontal laterals (1600-2500 feet).

1. Prepare location and dig working pit.
2. MIRU WSU, reverse unit, and H2S equipment. Bullhead kill weight fluid down tubing.
3. ND wellhead and NU BOP's. Pressure test BOP's to working pressure.
4. Continue to POH with related equipment (tubing and rods for producers or tubing and packer for injectors).
5. RU wireline to run any logs desired and run gage ring for casing size and weight.
6. Set retrievable bridge plug and pressure test casing to 1000 psi.
7. RDMO WSU.
8. MIRU 24 hr. WSU. NU BOP's and pressure test with chart.
9. PU tubing, drilling collars, and drill pipe in derrick and run in hole. Then POH and stand back.
10. Run packer on wireline and set using GR/CCL log to correlate with. RD wireline.
11. PU drillpipe with UBHO sub in string and latch into packer to survey the hole and obtain orientation of keyway. POH w/gyro and drill string.
12. Orient whipstock on surface to desired bearing and RIH on drill pipe. Latch into packer. Shear starter mill bolt and make starter cut.
13. POH w/ starter mill and pick up window mill and watermelon mill and continue to mill window. Drill 1-2 ft of formation
14. POH w/ mills and PU curve building assembly and drill string with UBHO sub in string and RIH.
15. RU gyro to assist in time drilling and starting out of the casing window. POH w/ gyro when inclination dictates it must be pulled.
16. Finish drilling the curve using the MWD.
17. POH once curve is finished and PU lateral motor to drill the lateral using MWD.
18. Once lateral TD is reached, POH w/ directional equipment.
19. PU retrieving hook and RIH on drill pipe. Retrieve whipstock and PU new whipstock oriented for desired bearing to start in hole.
20. Repeat steps 12 through 19 for each subsequent lateral.

RATHERFORD UNIT # 20-66
 GREATER ANETH FIELD
 1369' FNL & 1221' FWL
 SEC 20-T41S-R24E
 SAN JUAN COUNTY, UTAH
 API 43-037-31592
 PRISM 0043107

PRODUCER

Capacities:	bbl/ft	gal/ft	cuft/ft
2-7/8" 6.5#	.00579	.2431	.0325
7" 20#	.0404	1.7005	.2273
7" 23#	.0393	1.6535	.2210
7" 26#	.0382	1.6070	.2148
2-7/8"x7"20#	.0325	1.3633	.1822
2-7/8"x7"23#	.0313	1.3162	.1760
2-7/8"x7"26#	.0302	1.2698	.1697



Ratherford Unit #20-66

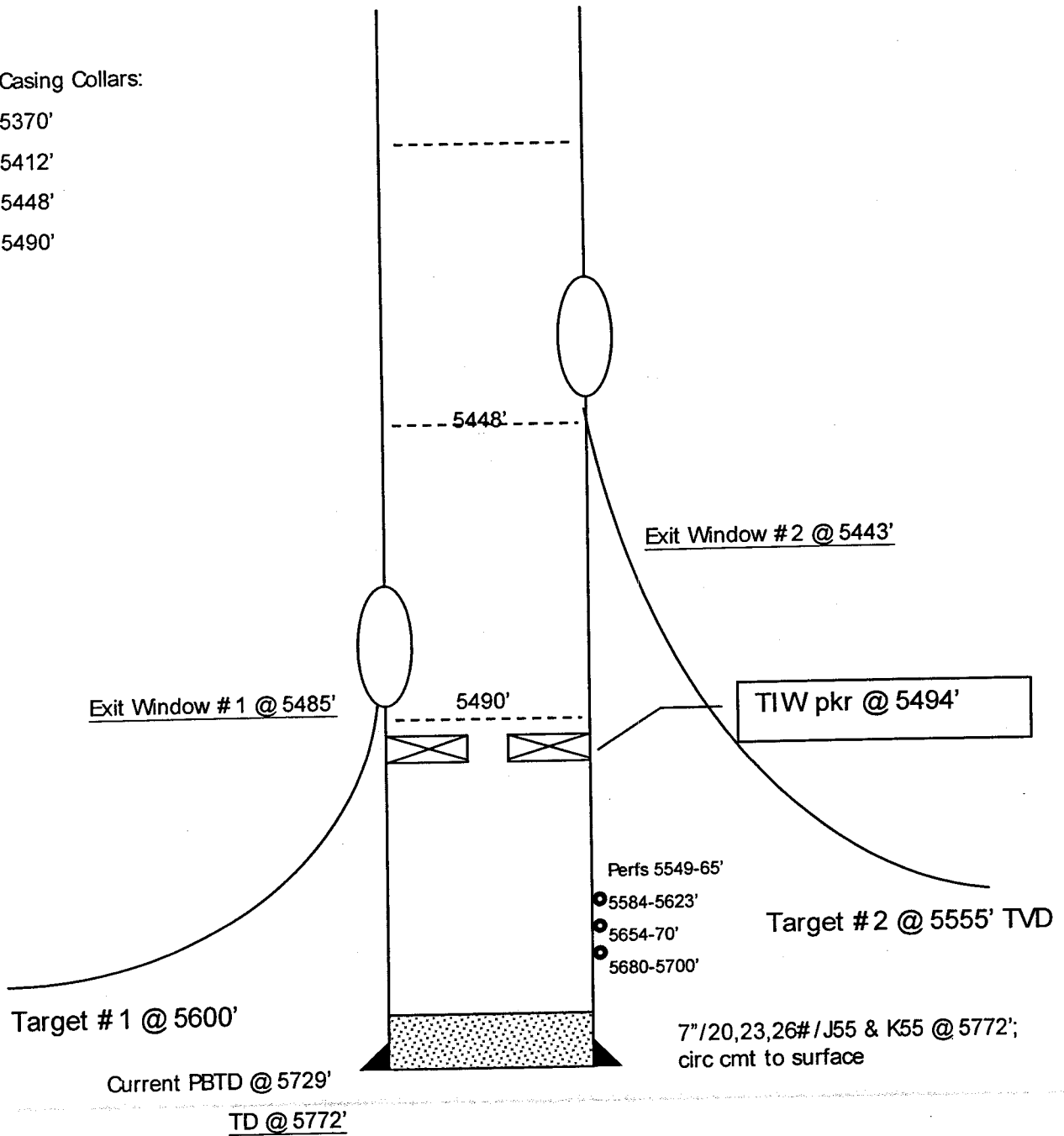
Casing Collars:

5370'

5412'

5448'

5490'



Window	Btm-Top of Window	Ext length	Curve Radius	Bearing	Horiz Displ
1	5485-73	-----	115	325	1600
2	5443-35	42	112	310	2500

The double spline is 2.42 ft long and the bottom of the whipstock, the latch, the debris and the shear sub are 8.68 ft long. These lengths must be added to the extension lengths to determine the entire whipstock assembly length.

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 08/17/98

API NO. ASSIGNED: 43-037-31592

WELL NAME: RATHERFORD 20-66 (MULTI-LEG)
OPERATOR: MOBIL EXPL & PROD (N7370)
CONTACT: _____

PROPOSED LOCATION:

SWNW 20 - T41S - R24E

SURFACE: 1369-FNL-1221-FWL

BOTTOM: 0264-FNL-0620-FEL *(Multi-lateral)*

SAN JUAN COUNTY

GREATER ANETH FIELD (365)

LEASE TYPE: IND

LEASE NUMBER: 14-20-603-353

SURFACE OWNER: _____

INSPECT LOCATION BY: / /

TECH REVIEW	Initials	Date
Engineering		
Geology		
Surface		

PROPOSED FORMATION: DSCR

RECEIVED AND/OR REVIEWED:

___ Plat
___ Bond: Federal[] State[] Fee[]
 (No. _____)
___ Potash (Y/N)
___ Oil Shale (Y/N) *190-5(B)
___ Water Permit
 (No. _____)
___ RDCC Review (Y/N)
 (Date: _____)
___ St/Fee Surf Agreement (Y/N)

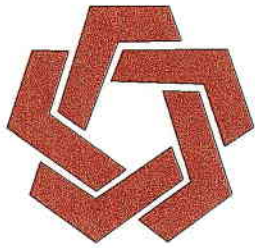
LOCATION AND SITING:

___ R649-2-3. Unit _____
___ R649-3-2. General
___ R649-3-3. Exception
___ Drilling Unit
 Board Cause No: _____
 Date: _____

COMMENTS: _____

STIPULATIONS: ① FEDERAL APPROVAL

② DIRECTIONAL DRILLING



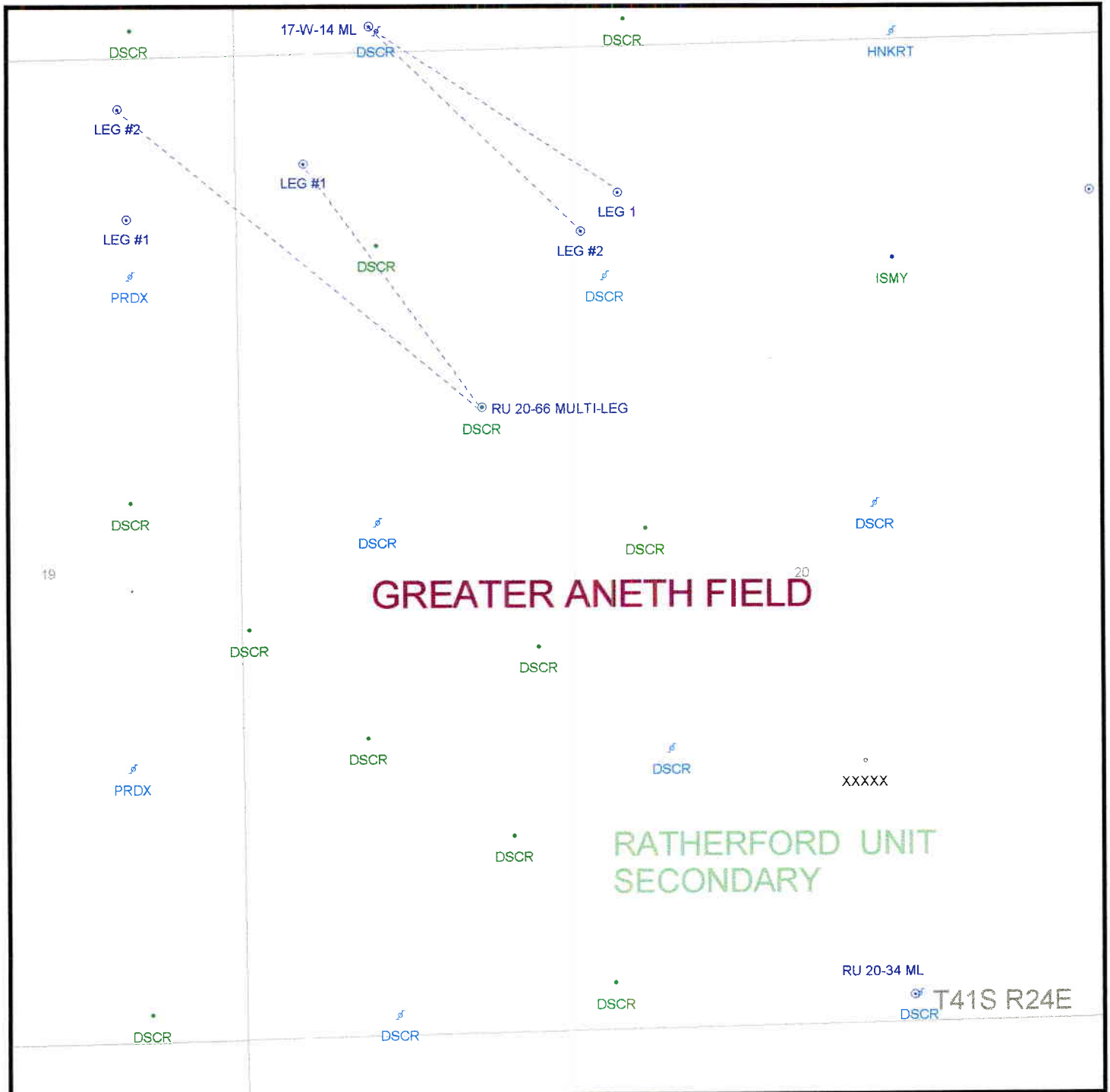
DIVISION OF OIL, GAS & MINING

OPERATOR: MOBIL EXPL & PROD (N7370)

FIELD: GREATER ANETH (365)

SEC. 20 & 21, TWP 41S, RNG 24E

COUNTY: SAN JUAN UAC: R649-2-3 RATHERFORD UNIT



DATE PREPARED:
18-AUG-1998



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor

Ted Stewart
Executive Director

Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

801-359-3940 (Fax)

801-538-7223 (TDD)

August 20, 1998

Mobil Exploration & Producing
P.O. Box 633
Midland, Texas 79702

Re: Ratherford 20-66 Well, 1369' FNL, 1221' FWL, SW NW,
Sec. 20, T. 41 S., R. 24 E., San Juan County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-037-31592.

Sincerely,

A handwritten signature in cursive script that reads "John R. Baza".
John R. Baza
Associate Director

lwp

Enclosures

cc: San Juan County Assessor
Bureau of Land Management, Moab District Office

Operator: Mobil Exploration & Producing
Well Name & Number: Ratherford 20-66
API Number: 43-037-31592
Lease: 14-20-603-353
Location: SW NW Sec. 20 T. 41 S. R. 24 E.

Conditions of Approval

1. General

Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for Permit to Drill.

2. Notification Requirements

Notify the Division within 24 hours prior to spudding the well. Contact Jim Thompson at (801) 538-5336.

Notify the Division prior to commencing operations to plug and abandon the well. Contact Dan Jarvis at (801) 538-5338 or Robert Krueger at (801) 538-5274.

3. Reporting Requirements

All required reports, forms and submittals shall be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. State approval of this well does not supersede the required federal approval which must be obtained prior to drilling.

5. In accordance with Utah Admin. R. 649-3-11, Directional Drilling, submittal of a complete angular deviation and directional drilling survey report is required.

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: MOBIL E & P

Well Name: RATHERFORD 20-66

Api No. 43-037-31592 Lease Type: INDIAN

Section 20 Township 41S Range 24E County SAN JUAN

Drilling Contractor BIG "A" RIG # 25

SPUDDED:

Date 9/11/98

Time

How ROTARY

Drilling will commence

Reported by BENNY BRIGGS

Telephone # 1-435-651-3473

Date: 9/11/98 Signed: JLT



ROCKY MOUNTAIN GEO-ENGINEERING

Electronic Rig Monitoring Systems • Well Logging • Consulting Geology • Coal Bed Methane Services

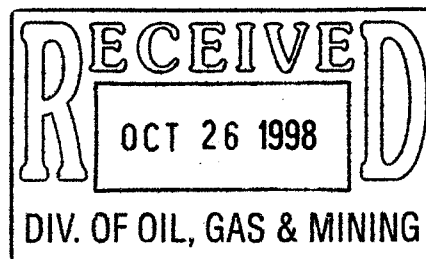
PASON ROCKY MOUNTAIN GEO-ENGINEERING CORP.

2450 INDUSTRIAL BLVD. • GRAND JUNCTION, CO 81505

(970) 243-3044 • (FAX) 241-1085

Wednesday, October 21, 1998

Division of Oil & Gas Mining
State of Utah
1594 West North Temple
3 Triad Center, Ste. 1210
Salt Lake City, UT 84116



Re: Ratherford Unit #20-66 Legs 1 & 2
Sec. 20, T41S, R24E
San Juan County, Utah

43-032-31592

Dear Sirs:

Enclosed is the final computer colored log and geology report for the above referenced well.

We appreciate the opportunity to be of service to you and look forward to working with you again in the near future.

If you have any questions regarding the enclosed data, please contact us.

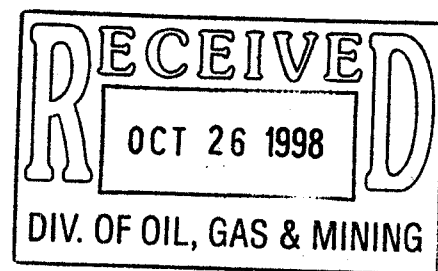
Sincerely,

Bill Nagel
Senior Geologist

BN/dn

Enc. 1 Final Computer Colored Log and Geology Report For Each Leg

cc Letter Only; Dana Larson; Mobil E & P U.S., Inc.; Midland, TX



MOBIL

**RATHERFORD UNIT #20-66
NW HORIZONTAL LATERAL LEG #1
UPPER 1-B POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 20, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
prepared by
DAVE MEADE
PASON/ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

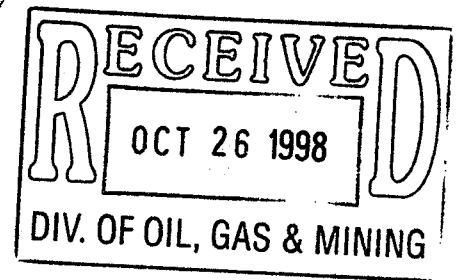


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WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #20-66NW HORIZONTAL LATERAL LEG #1 IN 1-B UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 20, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4797' GL:4785'
SPUD DATE:	9/12/98
COMPLETION DATE:	9/18/98
DRILLING ENGINEER:	BENNY BRIGGS / SIMON BARRERA
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / LUKE TITUS
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES
HOLE SIZE:	4 3/4"
CASING RECORD:	SIDETRACK IN WINDOW AT 5485' MEASURED DEPTH
DRILLING MUD:	M-I
ENGINEER:	RON WESTENBERG / MIKE PITTSINGER
MUD TYPE:	FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	7887' MEASURED DEPTH; TRUE VERTICAL DEPTH-5600.4'
STATUS:	PREPARING WELL FOR NW LATERAL #2

DRILLING CHRONOLOGY
RATHERFORD UNIT #20-66
1-B NW HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	ACTIVITY
9/11/98	0'	0'	MOVE RIT TO TO R.U. #20-66 LOCATION- RIG UP-NIPPLE UP BOP-TEST-RIG UP
9/12/98	0'	0'	RIG UP-P.U. RET. TOOL-STRAP & P. U. DRL CLRS & DRL PIPE-TIH-TAG R.B.P. & CIR-TOH-L.D. TOOLS-RIG UP WIRE LINE & RIH W/PACKER-SET @ 5494'-POH-M.U. UBHO & ANCHOR LATCH-TIH-CIR & WASH THRU DRLG STRING-STING ON TO PACKER & RUN GYRO-MIX & PUMP 90 BBLs LCM (TO REGAIN CIR)-TOH
9/13/98	5494'	9'	TOH-P.U. WHIPSTOCK #1 & STARTER MILL-ORIENT-TIH-SET WHIPSTOCK @ 5494'-CHANGE OUT GRANT RUBBER-MILL W/STARTER MILL 5476' TO 5478'-CIR BTMS UP-TOH-L.D. STARTER MILL-P.U. WINDOW MILL & WATER MELON MILLS-TIH-MILL W/WINDOW MILLS 5476' TO 5485'-PUMP 10 BBL SWEEP & CIR OUT-L.D. 10 JTS PIPE-TOH- L.D. MILLS-P.U. CURVE ASSEM.-ORIENT & TEST-TIH-WASH THRU PIPE (WELL LOSING 15-20 BBLs FLUID ON TRIP)-R.U. GYRO DATA-RUN GYRO
9/14/98	5485'	191'	RUN GYRO-TIME DRLG 5485' TO 5488'-DIR DRLG & WIRELINE SURVEYS TO 5513'-PULL GYRO & RIG DOWN GYRO DATA-DIR DRLG & SURVEYS TO 5676'-PUMP 10 BBL SWEEP & CIR SPLS-PUMP 10 BBLs BRINE-CIR OUT-L.D. 67 JTS PIPE-TOH-L.D. CURVE ASSEM.-P.U. LATERAL ASSEMBLY- ORIENT & TEST-P.U. 60 JTS PIPE-TIH-DIDN'T TAG BTM
9/15/98	5676'	146'	TOH-TO TUBING-P.U. 10 JTS TUBING-TIH-CIR & WASH THRU PIPE-DIR DRLG & SURVEYS
9/16/98	6493'	972'	DIR DRLG & SURVEYS
9/17/98	6926'	539'	DIR DRLG & SURVEYS
9/18/98	7465'	422'	DIR DRLG & SURVEYS TO 7887' (TD LATERAL #1)-PUMP SWEEP & CIR SPLS-PUMP 10 BBLs BRINE-L.D. 2 JTS PIPE-TOH TO WINDOW-PUMP 40 BBLs BRINE-L.D. LATERAL ASSEMBLY-P.U. RETRIEVING HOOK-TIH-HOOK WHIPSTOCK-TOH

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #20-66 NW 1-B HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
9/11/98	0'	0'			
9/12/98	0'	0'			
9/13/98	5494'	9'			
9/14/98	5485'	191'			
9/15/98	5676'	146'			
9/16/98	6493'	972'			
9/17/98	6926'	539'			
9/18/98	7465'	422'			
	7887'	TD			

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-B HORIZONTAL LATERAL LEG #1

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-2GP	5485'/ 5676'	191'	11.5	16.6
#2	4 3/4"	STC	MF-3P	5676'/ 7887'	2211'	79	28

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-B HORIZONTAL LATERAL LEG #1

DATE	DEPT H	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
9/11/98	0'	NO	CHECK	-	-	-	-	-	-	-	-	-	-	-
9/12/98	5400'	8.4	26	1	1	0/0	8.0	NC	NC	600	80	0%	0%	100%
9/13/98	5476'	8.4	26	1	1	0/0	8.0	NC	NC	3200	800	0%	0%	100%
9/14/98	5513'	8.4	26	1	1	0/0	12.5	NC	NC	7000	240	TR	0%	100%
9/15/98	5768'	8.5	26	1	1	0/0	12.5	NC	NC	9400	120	1%	0%	99%
9/16/98	6671'	8.5	26	1	1	0/0	12.0	NC	NC	10800	80	1%	0%	99%
9/17/98	7022'	8.3	27	2	1	0/0	11.5	NC	NC	11900	200	4%	8%	88%
9/18/98	7778	8.3	27	2	1	0/0	11.5	NC	NC	11000	160	2%	5%	93%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/20-66 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5300.00	0.42	164.71	5299.83	25.42 S	3.84 W	-9.75	0.00
5476.00	0.41	147.24	5475.83	26.57 S	3.33 W	-10.78	0.07
5485.00	3.80	293.00	5484.82	26.48 S	3.59 W	-10.51	46.06
5495.00	7.60	303.30	5494.77	25.99 S	4.45 W	-9.52	39.20
5505.00	12.30	306.35	5504.62	25.00 S	5.86 W	-7.80	47.28
5515.00	17.20	307.82	5514.28	23.46 S	7.88 W	-5.27	49.14
5525.00	22.00	308.70	5523.70	21.38 S	10.52 W	-1.94	48.09
5535.00	26.90	311.70	5532.80	18.70 S	13.67 W	2.14	50.53
5545.00	31.40	314.30	5541.53	15.37 S	17.22 W	6.90	46.74
5555.00	36.60	316.30	5549.82	11.40 S	21.15 W	12.31	53.18
5565.00	41.80	316.90	5557.57	6.81 S	25.49 W	18.39	52.14
5575.00	47.90	316.80	5564.65	1.66 S	30.31 W	25.16	61.00
5585.00	53.80	315.40	5570.97	3.92 N	35.69 W	32.64	59.99
5595.00	58.40	312.50	5576.54	9.67 N	41.67 W	40.73	51.91
5605.00	61.90	308.40	5581.52	15.29 N	48.27 W	49.28	49.89
5615.00	64.90	304.60	5586.00	20.61 N	55.45 W	58.17	45.32
5625.00	66.90	307.30	5590.08	25.97 N	62.84 W	67.26	31.74
5635.00	70.60	312.40	5593.71	31.94 N	69.99 W	76.46	60.22
5645.00	75.00	316.00	5596.67	38.60 N	76.83 W	85.75	55.84
5676.00	89.40	312.00	5600.86	59.86 N	98.88 W	115.58	48.17
5719.00	89.20	307.30	5601.39	87.29 N	131.97 W	158.06	10.94
5751.00	89.70	303.90	5601.70	105.91 N	157.99 W	189.95	10.74
5783.00	90.10	299.90	5601.75	122.82 N	185.15 W	221.94	12.56
5815.00	90.90	296.40	5601.47	137.91 N	213.36 W	253.89	11.22
5846.00	90.40	293.60	5601.12	151.01 N	241.45 W	284.73	9.17
5878.00	89.70	291.80	5601.09	163.36 N	270.97 W	316.40	6.04
5910.00	90.60	289.30	5601.01	174.59 N	300.93 W	347.88	8.30
5942.00	90.40	289.70	5600.73	185.27 N	331.09 W	379.25	1.40
5974.00	90.50	289.00	5600.48	195.88 N	361.28 W	410.60	2.21
6005.00	90.10	288.50	5600.32	205.84 N	390.64 W	440.91	2.07
6037.00	89.70	287.80	5600.37	215.81 N	421.05 W	472.13	2.52
6068.00	89.30	287.40	5600.64	225.18 N	450.59 W	502.30	1.82
6100.00	89.10	287.60	5601.09	234.80 N	481.11 W	533.43	0.88
6132.00	88.70	287.20	5601.70	244.37 N	511.64 W	564.54	1.77
6164.00	88.80	287.40	5602.40	253.88 N	542.18 W	595.64	0.70
6195.00	90.60	286.90	5602.56	263.03 N	571.80 W	625.75	6.03
6227.00	90.50	287.10	5602.26	272.38 N	602.40 W	656.82	0.70
6259.00	90.90	287.10	5601.86	281.79 N	632.99 W	687.90	1.25

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/20-66 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6291.00	91.90	286.50	5601.08	291.04 N	663.61 W	718.93	3.64
6322.00	92.40	286.90	5599.92	299.94 N	693.28 W	748.96	2.06
6354.00	91.20	288.50	5598.91	309.66 N	723.75 W	780.10	6.25
6385.00	90.60	290.00	5598.43	319.88 N	753.01 W	810.46	5.21
6417.00	90.40	291.60	5598.15	331.24 N	782.93 W	841.97	5.04
6448.00	90.50	293.40	5597.90	343.10 N	811.56 W	872.64	5.82
6479.00	91.20	294.80	5597.44	355.76 N	839.86 W	903.42	5.05
6511.00	91.10	296.20	5596.80	369.53 N	868.73 W	935.27	4.39
6543.00	91.80	296.20	5595.99	383.66 N	897.44 W	967.15	2.19
6575.00	92.50	296.90	5594.79	397.95 N	926.04 W	999.04	3.09
6606.00	93.00	298.70	5593.31	412.39 N	953.43 W	1029.96	6.02
6638.00	91.90	299.90	5591.94	428.04 N	981.31 W	1061.91	5.08
6670.00	91.50	301.10	5590.99	444.27 N	1008.87 W	1093.90	3.95
6701.00	91.60	302.20	5590.15	460.53 N	1035.25 W	1124.88	3.56
6733.00	91.70	303.80	5589.23	477.95 N	1062.08 W	1156.85	5.01
6765.00	90.90	305.20	5588.50	496.07 N	1088.44 W	1188.77	5.04
6796.00	89.10	304.80	5588.50	513.85 N	1113.83 W	1219.69	5.95
6828.00	89.20	306.60	5588.98	532.52 N	1139.81 W	1251.57	5.63
6859.00	88.90	308.10	5589.49	551.33 N	1164.45 W	1282.37	4.93
6890.00	88.80	307.80	5590.11	570.39 N	1188.89 W	1313.13	1.02
6922.00	89.30	307.60	5590.64	589.95 N	1214.21 W	1344.90	1.68
6953.00	90.30	308.50	5590.75	609.06 N	1238.62 W	1375.65	4.34
6984.00	92.30	308.50	5590.05	628.35 N	1262.87 W	1406.37	6.45
7016.00	92.40	307.80	5588.74	648.10 N	1288.02 W	1438.08	2.21
7048.00	90.90	307.40	5587.82	667.62 N	1313.36 W	1469.85	4.85
7080.00	90.00	307.60	5587.56	687.10 N	1338.75 W	1501.63	2.88
7112.00	86.80	308.70	5588.46	706.85 N	1363.90 W	1533.36	10.57
7143.00	86.70	308.70	5590.21	726.20 N	1388.05 W	1564.02	0.32
7175.00	86.90	308.80	5592.00	746.20 N	1412.97 W	1595.67	0.70
7207.00	87.20	308.80	5593.65	766.23 N	1437.87 W	1627.32	0.94
7239.00	87.60	309.20	5595.10	786.35 N	1462.72 W	1658.97	1.77
7270.00	89.30	309.20	5595.94	805.93 N	1486.73 W	1689.63	5.48
7301.00	89.40	309.90	5596.29	825.67 N	1510.63 W	1720.27	2.28
7333.00	89.20	310.10	5596.68	846.24 N	1535.14 W	1751.86	0.88
7364.00	89.70	311.10	5596.98	866.41 N	1558.68 W	1782.41	3.61
7396.00	89.20	312.00	5597.29	887.63 N	1582.63 W	1813.86	3.22
7427.00	89.20	312.40	5597.72	908.45 N	1605.59 W	1844.25	1.29
7459.00	89.40	311.00	5598.11	929.74 N	1629.48 W	1875.68	4.42

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/20-66 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
7491.00	90.00	309.40	5598.28	950.39 N	1653.92 W	1907.25	5.34
7523.00	89.60	307.80	5598.39	970.36 N	1678.93 W	1938.96	5.15
7554.00	89.90	308.10	5598.52	989.42 N	1703.37 W	1969.72	1.37
7585.00	90.60	308.80	5598.39	1008.70 N	1727.65 W	2000.45	3.19
7617.00	90.90	308.80	5597.97	1028.75 N	1752.59 W	2032.14	0.94
7649.00	89.90	307.80	5597.75	1048.58 N	1777.70 W	2063.87	4.42
7680.00	88.60	307.30	5598.15	1067.47 N	1802.27 W	2094.66	4.49
7712.00	89.30	307.60	5598.74	1086.92 N	1827.67 W	2126.44	2.38
7744.00	90.10	307.30	5598.91	1106.38 N	1853.08 W	2158.23	2.67
7776.00	90.50	306.70	5598.74	1125.64 N	1878.63 W	2190.05	2.25
7808.00	90.60	306.60	5598.43	1144.74 N	1904.30 W	2221.88	0.44
7839.00	88.20	306.90	5598.76	1163.28 N	1929.14 W	2252.72	7.80
7855.00	87.70	306.70	5599.33	1172.86 N	1941.94 W	2268.62	3.37
7887.00	87.70	306.70	5600.61	1191.97 N	1967.58 W	2300.43	0.00

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.

N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.

TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.

THE VERTICAL SECTION ORIGIN IS WELL HEAD.

THE VERTICAL SECTION WAS COMPUTED ALONG 300.87 (TRUE).

CALCULATION METHOD: MINIMUM CURVATURE.

LAST SURVEY ENTERED IS PROJECTED TO BIT.

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-B HORIZONTAL LATERAL LEG #1

DEPTH	LITHOLOGY
5485.00 5500.00	"LS ltgybrn-gybrn,occ crm-tan,crpxl-micxl,rthy,arg,sl mrly,dol,anhy,v sl slty,tt,v sl intxl POR,NFSOC,thn mbrn-gybrn micxl DOL arg-mrly anhy lmy grdg to dol SH tt NFSOC scat SH blk sbblky mfrm-brit calc-dol sl carb mica ip & brn-dkbrn CHT frag"
5500.00 5510.00	"LS ltbrn-gybrn,occ crm,AA,incr mrly,cln-dns ip,tt,NFSOC,w/intbd DOL AA,v mrly grdg to dol MRLST,v thn blk-dkgybrn SH calc-dol v dol ip,rr CHT frag AA"
5510.00 5520.00	"LS AA,v dol arg,occ dns,rr mic fos,tt,NFSOC,w/intbd DOL ltbrn-mbrn-gybrn AA v arg-sl mrly lmy ip v rr mic fos dns tt,NFSOC,thn SH & v rr CHT AA"
5520.00 5530.00	"LS crm-tan-ltgy,micxl,occ crpxl,arg,slty-v slty,rthy,occ cln-dns,sl chty,anhy ip,tt,NFSOC w/scat DOL ltbrn-brn,crpxl-micxl,sl lmy,occ rthy,mrly ip,dns,cln,tt,NFSOC,rr SH blk,dol AA,tr trns1-bf CHT"
5530.00 5550.00	"SH blk-dkgy,occ gy-dkgybrn,sbplty-sbblky,sl fis,mica,carb,calc-sl dol,sooty,w/LS tan-crm,ltbrn,crpxl-micxl,cln-dns,occ rthy-chk,arg-mrly ip,w/tr ANHY fl frac,v rr frac-intxl POR,v rr bri yel FLOR,n vis STN-CUT & v rr DOL ltbrn crpxl anhy lmy dns tt NFSOC"
5550.00 5570.00	"LS wh-crm,tan-ltbrn,occ brn,crpxl-vfxl,rr gran-micsuc,pred plty-chk sl chty PKST,bcmg ooc-oom GRNST w/depth,sl dol cmt,rr ANHY xl-POR fl,occ tt,tr-fr intxl-ool POR,tr-mfr bri yel FLOR,tr ltbrn-rr blk STN,n-fr slow-mod fast CUT,rr trns1 CHT frag & SH CVGS"
5570.00 5590.00	"LS crm-tan-ltbrn,occ brn,micxl-vfxl,gran-micsuc,ooc-oom GRNST,w/occ DOL-ANHY CMT,rr ANHY xl-tr POR fl,mfr-mg intxl-ool POR,fr-tr bri-dull yel FLOR,mfr ltbrn-rr blk STN,fr mod fast stmng CUT,bcmg pred dns chky-plty anhy chty sl ool PKST,tt,NFSOC"
5590.00 5610.00	"LS PKST AA w/thn intbd sl ooc-oom GRNST scat blk carb SH lams-ptgs scat intxl-ool POR,rr-sl tr FLOR-STN-CUT,bcmg pred tan-brn micxl-vfxl occ gran-micsuc ooc-oom GRNST AA,w/fr-mg intxl-ool POR,fr bri yel FLOR,mfr ltbrn STN-rr blk dd o STN,fr mod fast CUT"
5610.00 5620.00	"LS pred ooc-oom GRNST AA,w/thn intbd dns sl ool PKST AA,tt-mg intxl-ool POR,mfr bri-rr dull yel FLOR,mfr ltbrn-rr blk STN,mfr-fr slow-tr mod fast stmng CUT "
5620.00 5630.00	"LS ltbrn-brn,occ crm-tan,micxl-vfxl,gran-micsuc,ooc-oom GRNST,w/rr thn dns sl ool PKST frag,sl anhy-rr DOL cmt,rr tt-mg ool-fr intxl POR,mg bri yel FLOR,fr brn-tr blk STN,fr-mg slow-fast stmng CUT"

DEPTH	LITHOLOGY
5630.00 5650.00	"LS pred ooc-oom GRNST AA,w/thn intbds wh-tan-crm crpxl dns occ rthy-chk sl anhy occ chty PKST,tt-mg intxl-fr ool POR,fr dull-bri yel FLOR,fr ltbrn-brn STN-tr blk dd o STN,fr slow-mfr mod fast stmg mlky CUT"
5650.00 5660.00	"LS pred ooc-oom GRNST AA,w/rr scat dns PKST AA,rr tt-mg intxl-ool POR,fr-mg bri-dull yel FLOR,fr ltbrn-rr brn STN-tr blk dd o STN,mg mod fast stmg mlky CUT"
5660.00 5676.00	"LS brn-ltbrn,tan,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST AA,w/rr wh-tan-crm crpxl dns occ rthy-chk sl anhy occ chty tt PKST incl,v sl DOL-ANHY CMT,mg intxl-fr ool POR,fr bri-dull yel FLOR,fr brn STN-tr blk dd o STN,fr slow-mfr mod fast stmg mlky CUT"
5676.00 5690.00	"LS tan-ltbrn,occ brn-tr wh-crm,micxl-vfxl,gran-micsuc,sl ooc-oom GRNST,w/scat crpxl dns chk-occ plty sl ool PKST frag,occ ANHY-DOL cmt,v rr CHT frag,fr-mg intxl-tr ool POR,fr bri-dull yel FLOR,fr ltbrn-rr blk STN,fr-mg modfast-occ slow CUT; NOTE:TRACE SH CVGS & LCM"
5690.00 5700.00	"LS AA,pred sl ooc-oom GRNST,w/incr chk-plty wh dns PKST,decr CVGS,sl decr POR,FLOR-STN-CUT AA"
5700.00 5710.00	"LS inbd sl ool occ alg GRNST & dns occ plty-chk v sl ool PKST,v rr trnsd CHT frag,mfr-fr intxl-v rr ool-alg POR,fr FLOR-STN-CUT"
5710.00 5730.00	"LS ltbrn-brn,rr tan,micxl-vfxl,occ gran-micsuc,sl ooc-oom v sl alg GRNST,w/thn intbd brn-crm-wh PKST crpxl dns v sl ool,occ ANHY-DOL cmt,rr ANHY xl,v rr SH lams,tt-fr intxl-mfr ool-v rr vug POR,fr dull-bri yel FLOR,n-fr brn-v rr blk STN,n-fr mod fast CUT"
5730.00 5750.00	"LS ltbrn,rr tan-brn,v rr crm,micxl-vfxl,gran,rr micsuc,v rr ooc-oom v sl alg GRNST,rr-tr dns crpxl-micxl PKST,w/decr ANHY xl,tr DOL-ANHY cmt,mfr-fr intxl-v rr ool-pp vug POR,fr-mg dull-rr bri yel FLOR,mg ltbrn-v rr blk STN,mg slow-tr mod fast stmg CUT"
5750.00 5760.00	"LS ltbrn-tan,rr brn-crm,v sl ool-v sl alg GRNST AA,w/rr scat dns v sl ool PKST,mg intxl-rr ool-v rr pp vug POR,mg dull-rr bri yel FLOR,fr ltbrn-rr brn STN,v rr spty blk dd o STN,fr-mg mod fast-v rr fast stmg mlky CUT"
5760.00 5770.00	"LS AA,bcmg pred dns micxl brn-tan-v rr crm v sl ool chk-plty dns tt PKST,w/thn stks v sl ooc-oom GRNST w/v rr alg mat,pred tt w/stks POR-FLOR-STN-CUT AA"
5770.00 5780.00	"LS pred dns micxl PKST AA,w/stks GRNST AA,v stky POR-FLOR-STN-CUT AA"
5780.00 5790.00	"LS pred PKST AA,w/incr v sl ool-alg GRNST,tt-mg intxl-v rr ool-pp vug POR,fr FLOR-STN-CUT"

DEPTH	LITHOLOGY
5790.00 5810.00	"LS tan-ltbrn-brn,micxl-vfxl,gran-micsuc,pred sl ooc-oom rr alg GRNST,w/thn scat dns-tt wh-crm-brn crpxl occ chk-pkty PKST,occ DOL cmt,scat ANHY xl-cmt,rr thn blk SH bnd,mg intxl-v rr ool-alg POR,fr-mg bri-rr dull yel FLOR,n-fr brn-v rr blk STN,fr mod fast-rr fast stmg mlky CUT "
5810.00 5840.00	"LS tan-ltbrn-rr brn,pred GRNST AA,w/scat intbd plty-chk dns tt PKST AA,mg dull-fr bri yel FLOR,pred mg intxl-rr ool-v rr alg POR,STN-CUT AA"
5840.00 5860.00	"LS ltbrn-brn,rr tan,pred v sl alg-v rr ooc GRNST-rr trns1 CHT frag,w/v rr thn stks dns PKST,v rr ANHY xl,mg intxl-sl tr ool-v rr vug POR,mg FLOR-STN-CUT"
5860.00 5890.00	"LS brn,ooc lt-mbrn,micxl-vfxl,gran-micsuc,v sl ool-v rr alg GRNST,v rr crpxl dns chk-plty v sl ool PKST,v rr CHT frag-ANHY xl,v sl dol,v rr tt-mg intxl-rr ool-alg POR,mg dull-bri yel FLOR,fr brn-v rr blk STN,mg slow-fast stmg mlky CUT"
5890.00 5910.00	"LS pred ltbrn-brn,v sl alg-v rr ool GRNST AA,w/v rr scat dns v sl ool PKST AA,v rr trns1 CHT frag,mg intxl-v rr ool-alg POR,mg dull-bri yel FLOR,mg ltbrn-brn STN-v rr blk dd o STN,mg slow-fr mod fast stmg mlky CUT"
5910.00 5940.00	"LS AA,w/incr dns anhy v sl dol brn micxl PKST frag,decr intxl POR,w/n-v rr vis ool-alg POR,FLOR-STN-CUT AA"
5940.00 5950.00	"LS ltbrn-brn,micxl-vfxl,gran-micsuc,pred GRNST w/scat ool-alg mat,rr crpxl dns chk-plty v sl ool brn-wh crpxl tt PKST,v rr CHT frag-ANHY xl,v sl DOL cmt,fr-mg intxl-rr ool-alg POR,mg dull-bri yel FLOR,fr brn-v rr blk STN,mg slow-tr mod fast stmg mlky CUT"
5950.00 5970.00	"LS AA,pred GRNST w/v rr tr alg-ool mat,v rr scat dns brn crpxl PKST frag,v rr Brac fos,fr-mg intxl POR,n-v rr ool-alg POR,mg dull-bri yel FLOR,fr brn-rr blk STN,fr-mg mod fast-mg slow stmg mlky CUT"
5970.00 6000.00	"LS pred GRNST w/v rr tr ool-alg mat AA,v rr PKST frag AA,POR-FLOR-STN AA"
6000.00 6020.00	"LS ltbrn-brn,occ tan,micxl-vfxl,gran-micsuc,GRNST w/incr alg mat & n-v rr ool mat,v rr scat dns brn-tan-rr crm crpxl PKST frag,occ ANHY xl,v rr DOL-ANHY cmt,mg intxl-v rr alg POR,fr-mg dull-bri yel FLOR,mfr-fr brn-rr blk STN,fr-mg mod fast-slow stmg CUT"
6020.00 6050.00	"LS AA,pred sl alg GRNST,w/v rr scat ool mat,occ dns brn-rr crm-wh chk-plty PKST frag,mg intxl-sl tr pp vug POR,mg dull-bri yel FLOR,fr-mg ltbrn-brn STN,rr spty blk dd o STN,fr-mg slow-mod fast-rr fast stmg mlky CUT"

DEPTH	LITHOLOGY
6050.00 6070.00	"LS pred sl alg GRNST AA,w/sl incr scat ool mat,scat PKST frag AA,bcmg incr dol-occ v DOL rich cmt,mg intxl-sl tr pp vug-v rr spty ool POR,mg dull-tr bri yel FLOR,mg ltbrn-tr brn STN-v rr spty blk dd o STN,mg slow-fast stmg CUT"
6070.00 6100.00	"LS brn-mbrn,micxl-vfxl,gran,micsuc ip,v rr suc,pred sl alg GRNST,w/scat ool mat,rr dns crpxl chk-sl plty sl anhy PKST lams,scat ANHY xl-occ cmt,DOL rich cmt ip,mg intxl-tr pp vug-v rr ool POR,mg bri-tr dull yel FLOR,fr brn-rr blk STN,mg mod fast stmg CUT"
6100.00 6130.00	"LS AA,pred GRNST incr alg mat,n-v rr scat ool mat,v rr PKST frag,incr pp vug POR,FLOR-STN-CUT AA"
6130.00 6140.00	"LS tan-ltbrn-brn,crpxl-vfxl,occ gran-suc,intbd sl alg-alg GRNST & dns sl chk-plty dns PKST,occ DOL rich cmt,v rr CHT frag,tt-mfr intxl-v rr pp vug POR,mfr bri-dull yel FLOR,n-tr ltbrn-rr brn-v rr spty blk STN,n-mfr mod fast-fr slow stmg CUT"
6140.00 6160.00	"LS AA,f-even mbri yelgld FLOR,spty bri FLOR,tr-fst to m slo strmg CUT,pred dkbn-bn mf-mg o STN,rr blk dd o STN res"
6160.00 6200.00	"LS,ltbn-bn-occ crm,pred vf xln,grn-microsuc-occ suc mtx,sl dolo to occ dolo ip,pred mdns GRNST,v rr dns mic xln PCKST,rr carb mat,poss alg develop;pred mf-g intrxln to sl ool fab POR,occ suc fab POR,FLOR AA,o STN AA"
6200.00 6230.00	"LS,ltbn-bn,pred vf xln-occ mic xln,mdns-grn mtx,rr dns mtx,sl dolo to DOL cmt,pred sl alg GRNST w/ v rr dns-tt PCKST,rr ANHY xls-sl anhy;pred mf-mg intrxln to suc/alg fab POR,even dul yelgld FLOR,spty mbri yelgld FLOR,m slo strmg dif mlky CUT,mf-f o STN"
6230.00 6260.00	"LS AA,FLOR AA,CUT AA,mf-f bn-ltbn o STN,rr blk res o STN,pred mg-intrxln to sl alg/ microsuc /suc v rr vug fab POR"
6260.00 6290.00	"LS,ltbn-bn-crm,mic-pred vf xln,mdns-grn-microsuc-suc mtx,sl dolo,occ dolo rich,pred sl ool GRNST,v rr dns-tt PCKST,sl chlky;pred interxln to sl alg fab POR,rr vug POR,even mbri yelgld FLOR,fst dif-mg slo strmg CUT,pred mf-mg ltbn/bn o STN"
6290.00 6320.00	"LS AA,sl incr in oom/ooc fab POR,pred interxln to microsuc/suc fab POR,sl alg delevp,FLOR AA,CUT AA,o STN AA"
6320.00 6350.00	"LS,ltbn-bn-occ dkbn/crm,pred vf xln,mdns-grn mtx,sl dolo,v sl chlky,pred sl ool sl oom/ooc GRNST,rr-tr ool,sme calc fld casts;pred mf-mg intrxln to red-tr oom/ooc fab POR,microsuc/suc fab POR,mf-mg ltbn-bn o STN,rr blk dd o STN,even dul-mbri yelgld FLOR"
6350.00 6380.00	"LS,ltbn-crmocc bn,sl mott-mott,mic-pred vf xln,mdns-grn mtx,tr dns-tt mtx,pred sl ool to ool oom/ooc GRNST,sl rthy,sme calc fld casts;pred mf-f intrxln to sl oom/ooc to mf-oom/ooc POR,tr microsuc/suc fab POR,pred mf-ltbn-bn-occ dkbn mtx o STN,sl alg dev."

DEPTH

LITHOLOGY

6380.00 6410.00 "LS AA,ool rich ip,gfst to mg slo strmg dif milky ring CUT,even dul-bri yelgld FLOR,pred mf-mg ltbn-bn-occ dkbn w/tr blk dd o STN fld casts"

6410.00 6440.00 "LS,ltbn-tn-occ bn,mott,mic-vf xln,tr foss frgs, v rr suc alg mat,ool rich ip,sl rthy,v rr carb mat, pred sl oom/ooc GRNST,tr dns sl ool plty PCKST;FLOR AA,o STN AA,g fst to g slo strmg dif CUT,mf-g ltbn-bn mtx o STN,tr blk res"

6440.00 6470.00 "LS AA,ltbn-bn-crm,mott,sl alg dev.,sl dolo to occ dol ip,pred GRNST,f-g bri yelgld FLOR,gfst to g-slo strmg dif milky CUT,mf-mg ltbn-bn mtx o STN,pred mg-intrxln to reduced-f-oom to ooc fab POR,sl suc fab POR"

6470.00 6500.00 "LS AA,ltbn-bn-occ dkbn,gfst to mg slo strmg dif milky ring CUT,even dul-bri yelgld FLOR,pred mf-mg ltbn-bn-occ dkbn tr blk dd o STN rse"

6500.00 6530.00 "LS,ltbn-tn-crm,mic-vf xln,mdns-dns mtx,incr ANHY xls,tr chlky mat,pred ool oom/ooc GRNST to dns PCKST;pred intrxln to oom/ooc fab POR,ltbn-bn o STN,tr blk res,mbri yelgld FLOR,fst strmg CUT"

6520.00 6530.00 "LS,ltbn-bn-tn-crm,sl mott-mott,mic-vf xln,mdns-dns mtx,sl ool to ool GRNST w/ sl ool dns-tt PKST,CUT AA,even dul-mbri yelgld FLOR,mf-f ltbn o STN"

6530.00 6540.00 "LS tan-brn,micxl-vfxl,gran-micsuc,oom-oom GRNST & intbd wh-crm-tan dns cprxl occ chk-plty PKST,scat trnscl-clr CHT frag,occ ANHY xl-incl-rr POR fl,sl dol,tt-occ mg ool-fr intxl POR,tr mg bri-dull yel FLOR,n-fr brn-rr spty blk STN,n-fr mod fast-slow CUT"

6540.00 6570.00 "LS pred ooc-oom GRNST AA w/tr dns wh-crm-tan crpxl chk-plty occ anhy sl chty PKST frag,decr ANHY xl-POR FL,rr trnscl-clr CHT frag,rr tt-pred fr-mg ool-fr intxl POR,mg bri yel FLOR,fr-mg ltbrn-tr brn STN,rr spty blk dd o STN,occ n-pred mg mod fast stmg CUT"

6570.00 6610.00 "LS ltbrn,occ tan-brn,micxl-vfxl,gran-suc,pred ooc-oom GRNST,scat dns occ chk-plty sl anhy PKST,occ ANHY xl-POR fl,sl dol,scat CHT frag,occ tt,pred mg intxl-ool POR,mg bri-tr dull yel FLOR,n-mg ltbrn-brn-rr blk STN,n-mg mod fast-fast-tr slow stmg CUT"

6610.00 6640.00 "LS AA,pred ooc-oom GRNST AA,scat dns PKST frag,sl ANHY-DOL cmt,rr-tr ANHY xl,v rr trnscl-clr CHT frag,occ tt-mg intxl-fr ool POR,occ n-pred mg bri-dull yel FLOR,fr ltbrn-rr brn STN,v rr spty blk dd o STN,occ n-mfr slow-mg mod fast stmg CUT"

6640.00 6670.00 "LS ltbrn,occ tan-brn,micxl-vfxl,gran-suc,pred ooc-oom GRNST,sl tr dns occ chk-plty sl anhy PKST,occ ANHY xl-POR fl,sl dol,tr brn CHT frag,occ tt,pred mg intxl-ool POR,mg bri-tr dull yel FLOR,n-mg ltbrn-brn-rr blk STN,n-mg mod fast-fast-tr slow stmg CUT"

DEPTH	LITHOLOGY
6670.00 6700.00	"LS AA,w/incr amount dns crpxl tan occ wh-crm PKST incl & intra porosity mtx,v rr scat alt mat,decr intxl-ool POR,fr bri-tr dull yel FLOR,mfr-fr ltbrn-tr brn STN-rr-sl tr blk dd o STN,rr n-mfr-mg slow-fast stmg mlky CUT"
6700.00 6730.00	"LS tan-ltbrn,occ brn-ltgy,rr wh,crpxl-vfxl,gran-micsuc,occ ooc-oom GRNST,scat dns crpxl v sl ool chty anhy PKST,occ DOL-rr ANHY cmt,scat ANHY xl-trnsl-bf CHT frag,tt-mg intxl-ool POR,n-g bri-fr dull yel FLOR,n-fr brn-scat blk STN,n-slow-fast stmg CUT"
6730.00 6760.00	"LS pred ooc-oom GRNST w/v rr alg mat,incr amnt dns tt crpxl sl ool anhy chty PKST,scat trnsl-bf CHT frag,tr-mg POR-FLOR-STN-CUT"
6760.00 6790.00	"LS tan-ltbrn,occ brn,micxl-vfxl,gran-suc,micsuc ip,pred ooc-oom GRNST,w/incrg dns crm-tan,rr wh crpxl sl anhy occ chk-plty v sl ool PKST,rr trnsl-bf CHT frag,occ ANHY xl-cmt,sl dol,mf-mg intxl-ool POR bcmg tt,occ n-fr-mg bri-dull yel FLOR,n-fr lt"
6760.00 6800.00	"brn-brn STN,occ tr blk dd o STN,mg slow-fr mod fast-occ fast stmg mlky CUT"
6790.00 6810.00	"LS pred intbd ooc-oom GRNST & dns chk-plty v sl ool PKST occ mic fos AA,tt-tr mg intxl-ool POR,mfr bri-tr dull yel FLOR,tr-mfr ltbrn-brn STN-sl tr blk dd o STN,tr mod fast-mfr slow stmg mlky CUT"
6810.00 6830.00	"LS,ltbn-tn-crm,v sl mott,decr in ool,pred mdns sl oom/ooc GRNST,tr dns sl ool PCKSt,sl chlky/anhy,sl dolo;pred intrxln to pr-oom fab POR,mbri yelgld FLOR,mf-slo strmg dif CUT,mf ltbn-bn o STN,tr blk res"
6830.00 6850.00	"LS,tn-crm-occ ltbn,mic-vf xln,mdns-tt mtx,pred sl ool GRNST to dns sl chlky PCKST,v rr foss frgs;dul spty FLOR,tr slo strmg CUT,pred-m-mf ltbn o STN"
6850.00 6870.00	"LS AA,incr in dns sl ool PCKST,dul-spty mbri yelgld FLOR,wk-m slo strmg CUT,tr-m ltbn o STN w/blk dd o STN res,pred mf-f intrxln fab POR w/tr pr-m oom/ooc fab POR"
6870.00 6900.00	"LS,ltbn-tn-crm,mic-vf xln,mdns-dns mtx,pred v sl ool GRNST to dns PCKST,tr calc frac flgs,decr in ool;pred m-intrxln to tr oom/ooc fab POR,even dul FLOR,tr slo strmg sl milky CUT,tr-m ltbn o STN w/sme blk dd o STN res"
6900.00 6910.00	"LS,tn-crm-ltbn,mic-vf xln,mdns mtx,pred ool sl foo GRNST to PCKST,tr ANHY xls-sl anhy,occ chlky;pred m-mf intrxln fab POR,even dul to spty mbri yelgld FLOR,tr strmg CUT,tr-m ltbn o STN,tr blk res"
6910.00 6920.00	"LS AA,scat ANHY xls,mdns mtx,FLOR AA,CUT AA,o STN AA,pred intrxln fab POR"
6920.00 6930.00	"LS,tn-crm-ofwht-ltbn,mic-vf xln,mdns mtx-occ grn mtx,chlky,tr anhy-sl anhy,no vis to v rr oom to ooc fab POR,scat GRNST;spty dul-mbri FLOR,wk slo strmg CUT,tr-ltbn o STN & blk dd o STN res"

DEPTH	LITHOLOGY
6930.00 6940.00	"LS AA,chlky-mdns-dns mtx;pred intrxln fab POR,pr dul-spty bri yelgld FLOR,wk strm CUT,pr-tr ltbn to blk dd o STN res"
6940.00 6960.00	"LS,tn-crm-occ ltbn,mic-vf xln,mdns-sl grn mtx-grn mtx,chlky,sl anhy-tr ANHY xls,GRNST to PCKST;POR AA,CUT AA,o STN AA,FLOR AA"
6960.00 6980.00	"LS crm-wh,occ ltgy,crpxl-micxl,dns,occ chk-plty,sl anhy,occ chty PKST,w/v rr v thn stks micxl-vfxl gran-rr micsuc v sl ool sl dol GRNST,v rr ANHY xl,tt-v rr intxl-ool POR,n-v rr fnt dull yel FLOR,n-v rr spty brn-blk STN,n-v p slow dif CUT"
6980.00 6990.00	"LS sl incr tan,AA,sl incr v sl ool GRNST stks,scat trnscl-clr CHT frag,n-v p ool-intxl POR,n-tr bri-dull yel FLOR,n-rr ltbrn-v rr blk STN,n-v p slow dif-v rr slow stmg mlky CUT"
6990.00 7010.00	"LS crm-wh,tan,rr ltgy-brn,crpxl-micxl,pred dns chk-plty sl anhy occ chty PKST,w/incr micxl-vfxl gran-rr micsuc sl ool occ dol GRNST,rr ANHY xl-incl,rr trnscl-bf CHT,tt-tr intxl-ool POR,n-tr fnt dull-bri yel FLOR,n-tr spty brn-rrblk STN,n-tr slow dif-mod fast stmg CUT"
7010.00 7040.00	"LS bcmg pred brn-ltbrn micxl-vfxl,gran-micsuc,occ suc,sl ooc-oom GRNST,dol ip,scat ANHY xl-POR fl,w/tr thn intbd PKST AA,rr CHT frag,mfr-mg intxl-tr ool POR,mfr-mg bri-dull yel FLOR,mfr ltbrn-rr brn STN,v rr spty blk dd o STN,fr-mg mod fast-slow stmg CUT"
7040.00 7070.00	"LS ltbrn-brn sl ooc-oom GRNST AA,bcmg pred dns chk-plty sl chty PKST AA w/v thn stks GRNST,POR-FLOR-STN-CUT AA-decr to n-v p stks intxl-ool POR,spty dull-bri FLOR,tr spty brn-v rr blk STN,bcmg v p slow stmg CUT"
7070.00 7100.00	"LS crm-wh,occ tan-ltbrn,crpxl-micxl,occ vfxl-gran,micsuc stks,pred dns chk-plty anhy-v sl chty occ ool PKST,tt-rr stks sl ool-tr intxl POR,n-mfr dull-bri yel FLOR,n-tr ltbrn-v rr brn STN,v rr spty blk dd o STN,n-tr slow-v rr mod fast stmg CUT"
7100.00 7110.00	"LS pred PKST AA,w/thn stks & bcmg v sl ooc-oom GRNST,pred dns tt NFSOC,w/v thn stks & bcmg tr intxl-v rr ool POR,sl tr dull-bri yel FLOR,spty-sl tr ltbrn-brn STN,occ slow-rr mod fast stmg mlky CUT"
7110.00 7150.00	"LS crm-wh,tan-ltbrn,rr brn,crpxl-vfxl,occ gran-micsuc,intbd dns chk-plty sl anhy PKST & sl ooc-oom GRNST,v rr trnscl-clr CHT frag,scat tr ANHY-xl-v rr POR fl,v sl dol,tt-mfr intxl-tr ool POR,mfr dull-bri yel FLOR,spty brn-mbrn-v rr blk STN,n-fr slow-sl tr mod fast stmg mlky CUT "
7150.00 7180.00	"LS,ltbn-tn-crm-occ offwht,mic-vf xln,mdns-nds mtx,sl grn mtx ip,pred dns chlky/sl anhy PCKST & v sl ool sl oom/ooc GRNST,rr foss frgs,rr foss frgs,tr ANHY xls;pred interxln to sl oom/ooc fab POR,spty bri-even dul FLOR,tr ltbn o STN,tr-m slo strmg CUT"

DEPTH	LITHOLOGY
7180.00 7210.00	"LS AA,ltbn-crm-tn-ofwht,mic-vf xln,mdns-dns-grn mtx,sl dolo ip,pred GRNST to PCKST,sl ool,rr foss frgs,v rr buf-tn CHT frgs,sme calc frac flgs;dul FLOR,pr-mf ltbn o STN,rr blk res o STN,wk slo strmg CUT,pred interxln to sl oom/ooc fab POR"
7210.00 7240.00	"LS,ltbn-tn-crm,sl mott,mic-vf xln,mdns mtx,pr ed ool GRNST w/scat dns chlky PCKST,sl dolo ip,rr CHT frgs,sl anhy-tr ANHY xls,v rr foss frgs;pred mf-f untrxln to scat oom/ooc fab POR,mf-fltbn o STN,mg fst to f slo strmg CUT,g-mbri yelgld FLOR"
7240.00 7270.00	"LS AA,incr in ool GRNST,tr dns chlky PCKST;pred mf-mg ltbn-bn o STN,tr blk dd o STN,f-intrxln to sl oom/ooc fab POR,mbri-yelgld FLOR,fst to f-slo strmg CUT"
7270.00 7300.00	"LS,tr dkbn,pred ltbn-tn-crm,sl mott,mic-vf xln,mdns mtx,sl dolo,pred sl ool sl oom/ooc GRNST,sme dns chlky PCKST,sl anhy,rr foss frgs;pred interxln to oom/ooc fab POR,mbri yelgld FLOR,fst to m-slo strmg CUT"
7300.00 7330.00	"LS AA,ltbn-bn-tn,sl mott,mic-vf xln,mdns-grn mtx,sl dolo,sl chlky/sl anhy,pred GRNST w/sme PCKST;pred interxln/ool to poss oom/ooc fab POR,pred mg-ltbn-bn o STN,mbri yelgld FLOR,fst to slo strmg CUT"
7330.00 7360.00	"LS AA,fst dif-f slo strmg milky ring CUT,mf-mg ltbn-bn o STN w/sme blk o STN res,even dul-mbri yelgld FLOR,pred mf-mg intrxln/ool fab POR,poss smr oom/ooc fab POR,poss sme alg development"
7360.00 7390.00	"LS AA,FLOR AA,CUT AA,o STN AA,fri,pred interxln to occ vis oom/ooc fab POR,grn-poss sl vug alg dev"
7390.00 7420.00	"LS,ltbn-tn-bn,mic-vf xln,grn mtx,mdns-sl chlky mtx,sl oom/ooc GRNST,rr ANHY xls, v rr CHT frgs,sl dolo,tr calc frac flgs;pred intrxln to sme vis oom/ooc fab POR,even mbri yel FLOR,fst-tr slo strmg CUT,mf-ltbn-bn w tr blk dd o STN res"
7420.00 7450.00	"LS,ltbn-tn-crm-ofwht,mic-vf xln,grn-mdns mtx,pred GRNST poss oom/ooc w/rr intrbd chlky PCKST,ool;pred oom/ooc fab POR to intrexln fab POR,mf-strmg CUT/dif/milky ring CUT,bri yel FLOR,pred mf-mg o STN"
7450.00 7480.00	"LS AA,g-fst to f-slo dif strmg milky ring CUT,pred mf-g bn o STN,g-bri yel FLOR,pred interxln to oom/ooc fab POR,poss sme alg development"
7480.00 7510.00	"LS AA,FLOR AA,CUT AA,o STN AA,pred f-interxln to oom/ooc sl suc mtx ool POR,v sl dolo,fri"
7510.00 7540.00	"LS,tr dkbn,pred ltbn-tn-crm,sl mott,mic-vf xln,mdns mtx,sl dolo,pred sl ool sl oom/ooc GRNST,sme dns chlky PCKST,sl anhy,rr foss frgs;pred interxln to oom/ooc fab POR,mbri yelgld FLOR,fst to m-slo strmg CUT"

DEPTH	LITHOLOGY
7540.00 7560.00	"LS,ltbn-tn-crm,sl mott,mic-vf xln,mdns mtx,pred ool GRNST w/scat dns chky PCKST,sl dolo ip,rr CHT frgs,sl anhy-tr ANHY xls,v rr foss frgs;pred mf-f untrxln to oom/oc fab POR,mf-mg ltbn o STN,mg fst to f slo strmg CUT,g-mbri yelgld FLOR"
7560.00 7580.00	"LS AA,CUT AA,FLOR AA,o STN AA,pred intrxln to oom/oc fab POR"
7580.00 7610.00	"LS tan-ltbrn,rr brn-crm,micxl-vfxl,gran-micsuc,rr suc,pred ool-oom GRNST,v rr scat dns chk ip v sl ool anhy PKST frag,DOL cmt ip,v rr ANHY xl,fr-mg intxl-mfr ool POR,mg bri-sl dull yel FLOR,mfr-fr ltbrn-rr brn STN,v rr spty blk dd o STN,mg mod fast CUT"
7610.00 7630.00	"LS AA,w/sl incr dns PKST frag,pred sl ooc-oom GRNST,POR-FLOR-STN-CUT AA"
7630.00 7650.00	"LS pred ooc-oom GRNST AA,w/v rr scat PKST frag,sl incr ANHY xl-POR fl,mg intxl-fr ool POR,mg bri-v rr dull yel FLOR,mfr-fr ltbrn-v rr brn STN-rr spty blk dd o STN,mg mod fast-fast stmg mlky CUT"
7650.00 7680.00	"LS tan-ltbrn,rr brn-crm,micxl-vfxl,gran-micsuc,sl suc,pred ool-oom GRNST,rr scat dns chk ip v sl ool anhy PKST frag,DOL cmt ip,v rr ANHY xl,fr-mg intxl-mfr ool POR,mg bri-sl dull yel FLOR,mfr-fr ltbrn-tr brn STN,v rr spty blk dd o STN,mg mod fast CUT"
7680.00 7710.00	"LS pred ooc-oom GRNST AA,w/scat crpxl PKST AA,v sl anhy-v rr ANHY xl-POR fl,POR-FLOR-STN-CUT AA"
7710.00 7740.00	"LS AA,sl incr dns PKST AA,pred sl ooc-oom GRNST AA,sl decr ool POR,intxl POR AA,FLOR-STN-CUT AA"
7740.00 7770.00	"LS tan-ltbrn,rr brn-crm,micxl-vfxl,gran-micsuc,sl suc,pred ool-oom GRNST,rr scat dns chk ip v sl ool anhy PKST frag,DOL cmt ip,v rr ANHY xl,fr-mg intxl-mfr ool POR,mg bri-sl dull yel FLOR,mfr-fr ltbrn-tr brn STN,v rr spty blk dd o STN,mg mod fast CUT"
7770.00 7800.00	"LS pred ooc-oom GRNST AA,w/incr amnt tan-brn-crm PKST AA,v rr scat trns1-bf CHT frag,scat ANHY xl-v rr POR fl-cmt,occ DOL cmt,fr-mg intxl-tr-fr ool POR,fr-mg bri-dull yel FLOR,mfr ltbrn-sl tr brn STN-v rr spty blk dd o STN,fr-mg mod fast-tr fast stmg CUT"
7800.00 7820.00	"LS tan-ltbrn,rr brn,v rr crm-wh,crpxl-vfxl,occ gran-micsuc,intbd sl ooc-oom GRNST & dns occ chk-plty sl anhy v sl ool PKST,v rr trns1-bf CHT frag,scat ANHY xl,sl dol,tt-fr intxl-tr ool POR,mfr-mg bri-dull yel FLOR,n-fr ltbrn-brn-v rr blk STN,fr slow- mod fast-tr fast stmg mlky CUT "
7820.00 7840.00	"LS AA,decr dns crpxl PKST frag,incr ooc-oom GRNST,v rr scat CHT frag,sl tr-tr ANHY xl,rr DOL cmt,v p-mg intxl-ool POR,mfr-mg bri-dull yel FLOR,mfr ltbrn-rr brn STN-v rr spty blk dd o STN,mfr-mg slow-mod fast-v rr fast stmg CUT"

DEPTH

LITHOLOGY

7840.00 7860.00 "LS bcmg pred sl-v ooc-oom GRNST,rr-sl tr dns PKST AA,fr-mg
intxl-mfr ool POR,mg bri-v rr spty dull yel FLOR,mfr-fr ltbrn-brn STN,v rr
spty blk dd o STN,mg mod fast-tr fast stmg CUT"

7860.00 7887.00 "LS tan-ltbrn,rr brn-crm-wh,crpxl-vfxl,occ gran-micsuc,pred
sl ooc-oom GRNST w/thn intbd dns chk-plty sl anhy v sl ool PKST,v rr trns1-bf
CHT frag,sl tr ANHY xl,sl dol,tt-mg intxl-fr ool POR,fr-mg bri-dull yel
FLOR,n-tr ltbrn-brn-rr spty blk STN,n-mg mod fast-tr fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-B HORIZONTAL LATERAL LEG #1

FORMATION NAME		SAMPLES	SAMPLES	DATUM
		MEASURED DEPTH	TRUE VERTICAL DEPTH	KB:4797'
LOWER ISMAY		5485'	5485'	-688'
GOTHIC SHALE		5532'	5530'	-733'
DESERT CREEK		5549'	5542'	-745'
UPPER DC 1-A ZONE		5554'	5548'	-751'
UPPER DC 1-B ZONE		5601'	5579'	-782'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #20-66 Northwest Horizontal Lateral Leg #1 was a re-entry of the Mobil Ratherford Unit #20-66 located in Section 15, T41S, R24E, and was sidetracked in a northwesterly direction from 5485' measured depth, 5485' true vertical depth, on September 13, 1998. The lateral reached a measured depth of 7887', true vertical depth of 5600.6' at total depth, with a horizontal displacement of 2300' and true vertical plane of 306.7 degrees on September 18, 1998. The lateral was terminated in the Lower 1-B porosity zone in the Upper Desert Creek Member of the Paradox Formation. The curve and lateral were drilled with fresh water and brine water with polymer sweeps as the drilling fluid. The proposed target line was used as a reference point throughout the lateral. The curve and lateral sections were drilled with no significant mechanical problems. There was a very minor fluid loss throughout the curve and lateral sections, as well as a noticeable amount fluid being lost on trips.

The objective of the Ratherford Unit #20-66 northwest lateral Leg #1 was to penetrate and drill 2300' horizontally in the 1-B porosity zone of the Desert Creek; to define its lithology, and to evaluate the effective porosity and permeability of the zone. In this northwesterly direction, the 1-B porosity zone appeared to have a very consistent, as well as better developed porosity, than the southeasterly direction, thus was the target for drilling in this lateral. These objectives were met in this lower pay zone of the Desert Creek 1-B porosity bench, until reaching a measured depth of 6798', when the well path bumped and penetrated the top of the 1-B porosity zone. At the measured depth of 6798', 5588.5' true vertical depth, the lateral was thought to be below a hard streak near the base of the 1-B zone. After reevaluating the dip angles and other pertinent data, the well path was turned downward a shallow angle to try to reacquire the upper most porosity of the 1-B zone. Two differing porosity types were penetrated in the 1-B zone, in this northwesterly lateral. As the lateral dropped in vertical depth through the 1-B zone, the predominately oolitic to oomoldic limestone grainstone facies, became an algal limestone grainstone with very little oolitic material. This change in lithology indicated a change from a predominately high energy environment to a much lower energy environment. Throughout the lateral the limestones had a fair to moderately good sample shows, with good visible effective porosity and permeability, although the slightly algal grainstone had a slightly lower visible porosity. As the lateral bumped or penetrated the hard streaks within the zone and penetrated the top of the 1-B zone, a minor to significant increase in the dense, very slightly oolitic, occasionally platy and chalky limestone packstone was noted. These packstones had no, to very minor porosities and no to extremely poor sample and gas shows.

The curve was begun on September 13, 1998, at the top of the Lower Ismay before encountering the typical sections of the Gothic Shale, Desert Creek transition zone, the 1-A porosity zone and the 1-B porosity zone of the Upper Paradox Formation.

The top of the Lower Ismay carbonate cycle of the Upper Paradox Formation and was penetrated from a measured depth of 5485', true vertical depth 5485', to a measured depth of 5532', true vertical depth 5530'. Due to starting the lateral at the top of the Lower Ismay, the top was predominately an electric log pick. The upper 34' of the Lower Ismay was interbedded tan to cream, light gray to gray brown, cryptocrystalline to microcrystalline, dense, slightly anhydritic, fossiliferous limestones, argillaceous, brown to medium brown, gray brown, cryptocrystalline to microcrystalline

dolomites. There were very thin black carbonaceous shale partings and scattered buff to dark brown to translucent chert fragments noted in the limestones and dolomites. The Lower Ismay, from measured depths of 5519' to 5529', became a tan to cream to light gray, cryptocrystalline to microcrystalline limestone, with granular streaks, chalky, slightly to very silty, occasionally anhydritic, chalky and occasionally dolomitic in part. This limestone a streaks of well cemented, very silty limestone grainstones, some scattered translucent to light to dark brown chert fragments, and very rare thin brown, earthy dolomites. It was also noted that these limestones occasionally graded to very thin streaks of limey siltstones. The basal 3 feet of the Lower Ismay, from a measured depth of 5529' to a measured depth of 5532', was a very dense, slightly dolomitic limestone packstone and earthy limey dolomites. These limestones and dolomites became slightly to very marly with depth, and had scattered anhydrite interclasts and chert fragments. With the exception of some very minor streaks of intercrystalline porosity, with no visible sample shows noted near the top of the Lower Ismay, the Lower Ismay has no notable porosity. The basal limestones and dolomites of the Lower Ismay carbonates graded into limey to dolomitic carbonaceous shales of the Gothic Shale.

The Gothic Shale was penetrated at a measured depth of 5532', true vertical depth 5530', and gradationally underlies the Lower Ismay. The top of the Gothic was picked by a decrease in the penetration rate at the very top of the shale cycle and a significant increase in the amount of black carbonaceous shale in the cuttings. This shale member of the Upper Paradox Formation was seen to be twelve vertical feet thick in this northwesterly direction. This shale is black to dark gray, carbonaceous, occasionally grainy to silty, soft to slightly firm, sooty, slightly fissile, subblocky to subplaty, calcareous to slightly dolomitic and slightly micaceous. Very thin partings of dense, very slightly argillaceous, occasionally dolomitic limestones and clean to very argillaceous limey dolomites were noted in this shale member. The Gothic overlays the top of the Desert Creek Member with a sharp contact.

The top of the Desert Creek Member of the Upper Paradox Formation was picked at a measured depth of 5549', 5542' true vertical depth, with a decrease in penetration rate and the amount of dense limestone packstone in the samples. This transition zone had a true vertical thickness of approximately six feet. The transition zone between the Gothic Shale and the top of the Upper Desert Creek 1-A porosity zone was predominately a dense limestone packstone, which was very argillaceous and very slightly fossiliferous in part and had thinly interbedded argillaceous limey marlstones and very thin black carbonaceous shale partings. The limestones of the transition zone are light brown to cream to white to light gray, cryptocrystalline to microcrystalline, with very rare very finely crystalline streaks, dense, and very slightly dolomitic. Scattered in the limestones are very thin, dark brown, very argillaceous, very shaley, limey marlstones; some black, dolomitic, slightly micaceous, calcareous, very slightly carbonaceous shales and rare brown, microcrystalline, limey, argillaceous dolomite fragments. The transition zone had very poor intercrystalline porosity, but had no visible sample show. Near the base of the transition zone the dense limestones became increasingly oolitic and graded into the oolitic to oomoldic limestones of the upper 1-A porosity zone.

The top of the Desert Creek Upper 1-A porosity zone was encountered at a measured depth of 5554', true vertical depth of 5548', with a horizontal displacement of approximately 12'. The top was picked on the lithology becoming predominately a good oolitic to oomoldic limestone grainstone with a significant increase in the penetration rate and background gas. This oolitic to oomoldic limestone grainstones marked the top of the 1-A porosity zone. The porosity zone was 18' thick vertically in this northwesterly direction. These limestone grainstones are tan to light brown to brown, some cream, microcrystalline to very fine crystalline, with a granular to microcrystalline matrix and were very slightly dolomitic. The grainstones have a very minor amount of anhydrite crystal growth in the oolitic and molds as well as in the intercrystalline matrix and very rare translucent chert fragments. The grainstone facies had moderately good to good oolitic and intercrystalline porosity development. The sample show had a moderately fair to fair bright yellow fluorescence with a trace of brown to light brown oil stain and had minor traces of black bituminous* staining on the crystal faces and in the oolitic and molds. The grainstones had a spotty trace of bright to occasionally dull yellow

fluorescence and a moderately fair slow streaming to trace fast streaming cut. An increase in the background gas, along with a very minor trace of oil in the possum belly, was noted as soon as the 1-A zone was penetrated.

The top of the 1-A to 1-B transition zone was encountered at a measured depth of 5577', with a true vertical depth 5566'. This dense, slightly oolitic limestone packstone facies was cream to tan, occasionally white, cryptocrystalline to very slightly microcrystalline, slightly chalky to occasionally platy, clean and very slightly anhydritic. Scattered in the transition zone were translucent to buff chert fragments and very thin black carbonaceous shale laminations. These very dense limestone packstones had very minor streaks of very slightly oolitic to oomoldic limestone grainstone, with no to an extremely poor sample show. The transition zone had a true vertical thickness of 13', and graded into the oolitic to oomoldic limestone grainstones of the 1-B porosity zone.

The top of the Upper Desert Creek 1-B porosity zone was penetrated at a measured depth of 5601', true vertical depth 5579', with a horizontal displacement of approximately 45'. The lithology of the 1-B porosity zone was a very good oolitic to oomoldic limestone grainstone, like the 1-A zone described above. However, as curve section neared completion, the limestone grainstone showed an increase in algal material and a decrease in oolitic to oomoldic material. As the curve section was landed the lithology of the 1-B zone was predominately a slightly dolomitic, very slightly algal to slightly oolitic and oomoldic limestone grainstone, indicating a change in environment. Very thin streaks of dense, tight, cream to white to tan, cryptocrystalline to microcrystalline, slightly platy limestone packstones were scattered in the porosity in this curve section. The limestone grainstone has a moderately fair to moderately good visible oolitic and intercrystalline porosity and a fair to moderately good sample show. As soon as the 1-B zone was penetrated a slight increase in the background gases and an intermittent flare was noted. This 1-B porosity zone was the target zone for the entire northwest lateral, as it appeared to be better developed in this northwesterly direction based on the offsetting well logs.

The curve portion of the lateral was completed at a measured depth of 5676', true vertical depth 5601', at a horizontal displacement of 116', bearing 312 degrees, with an inclination of 89.4 degrees, on August 14, 1998, in the lower half of 1-B porosity zone. At this point a trip was made to lay down the curve assembly and pickup the lateral assembly.

Drilling of the northwest lateral was resumed on August 15, 1998, in the lower half of the Upper Desert Creek 1-B porosity bench of the Upper Paradox Formation. The lateral was slid for the first 171' in order to control the vertical depth, horizontal plane direction. The lateral was begun in the good very slightly oolitic and slightly oomoldic to very slightly algal limestone grainstone facies. This limestone grainstone was a light brown to brown, occasionally tan, microcrystalline to very fine crystalline, granular to microcrystalline, slightly dolomitic, with decreasing amounts of oolitic to oomoldic and algal material. Noted in the grainstone were very rare calcite and anhydrite cement and porosity filling. These grainstones had rare traces of oolitic and algal porosity to predominately good intercrystalline porosity, a moderately good bright yellow fluorescence, a moderately fair light brown to brown oil stain, with trace to poor black bituminous* stain, and a moderate to moderately fair fast to slow streaming cut. Scattered in this limestone grainstone were traces of white to cream to light brown, cryptocrystalline, dense, very slightly oolitic, and occasionally chalky to platy packstone.

At a measured depth of 5764', 5601.8' true vertical depth, with a horizontal displacement of 203', as the lateral was being slide for vertical control and azimuth correction, a hard streak near the base of the 1-B was bumped and the well path pushed slightly upward. This hard streak was noted with a decrease in penetration rate, an increase in dense, tight, slightly oolitic, chalky packstone and a decrease in grainstones in the samples. This hard streak was bumped and scraped at the proposed target line with a very shallow up dip until reaching a measured depth of approximately 5910', 5601'

true vertical depth, and a horizontal displacement of 285'. As the true vertical depth decreases and well path rose away from the hard streak, the lithology became predominately the very slightly oolitic to very slightly algal limestone grainstones. These grainstones were in a low energy environment in the lower portion of the 1-B porosity zone.

As the well path was rotated ahead, the well path was allowed to slowly rise at a very shallow angle of just over 90° until reaching a measured depth of 6020', 5602.3' true vertical depth. Upon reaching the measured depth of 6020' with a horizontal displacement of 555', a presumed hard streak began forcing the well path downward. A very slight increase in dense packstones was noted in the samples, as well as a downward trend in the angle of the well path. Despite several attempts to turn the well path upward, the well path continued downward at an average angle of 89.5°. During the short slides, the penetration rate showed a significant decrease, as well as an increase in the amount of dense packstone in the samples. The lithology in this downward trend in the well path, remained predominately in the limestone grainstones, which had very good intercrystalline to moderately fair algal porosity, and very rare oolitic material. At a measured depth of approximately 6160', 5602.5' true vertical depth, with a horizontal displacement of 592', the base of the 1-B zone was glanced off of. From a measured depth of 6160' to the measured depth of 6330', 5598' true vertical depth, with horizontal displacement of 747', the well path was allow to continued upward. As the well path was slowly being turned toward 90°, after reaching an angle of 92.4°, when the well bore glanced off the base of hard streak near the base of the lower 1-B porosity zone, turning the well path downward. As the well path neared the base of the hard streak, a change in the lithology was noted.

Beginning at a measured depth of approximately 6300', as the true vertical depth rose above 5600', a significant change in the lithology and environment of deposition, was noted. The lithology became predominately an oolitic to oomoldic limestone grainstone, with decreasing amounts of algal material. The limestone grainstone was tan to light brown, occasionally cream, microcrystalline to very finely crystalline, with a granular to sucrosic texture, and scattered traces of cream to white, cryptocrystalline, very slightly oolitic, occasionally anhydritic limestone packstone. The limestone grainstones had fair to moderately good intergranular to fair oolitic porosity, moderately good bright yellow fluorescence, a fair brown stain, with traces of black bichimum*, and a moderately fair to good streaming cut. After the well path bumped the base of a hard streak near the base of the 1-B porosity, the lateral was continued at a very shallow upward angle averaging approximately 90.7°, until reaching a measured depth of 6510', and a true vertical depth of 5596.8'.

At the measured depth of 6510', a decrease in the penetration rate was noted, along with an increase in the amount dense packstone in the samples and increase in the angle of the well path, as the base of the slowly thinning 1-B zone was encountered. Upon reaching the measured depth of 6510' and a horizontal displacement of approximately 940', the angle of the well path increased, as did the amount of packstone in the samples. The well path continued upward in the oolitic to oomoldic limestone grainstones, with a series of slides to bring the well path angle level. At the measured depth of 6672', 5591' true vertical depth, and a horizontal displacement of 1095', what was thought at the time to be a random hard streak was encountered and penetrated. As the well path was continued ahead with a series of slides to level and slowly drop the well path, the lithology from the measured depth of 6672' to a measured depth of 6930', with a true vertical depth of 5590.5, and a horizontal displacement of 1350', the lithology was predominately in a dense limestone packstone, with decreasing streaks of oolitic to oomoldic limestone grainstone. A slight increase in grainstones was noted as the well path reached a true vertical depth of 5588.5'. The packstones were cream to white to tan, rare light brown, cryptocrystalline to slightly microcrystalline, dense, occasionally chalky to platy, very slightly oolitic, with decreasing amounts of oolitic to oomoldic limestone grainstone. These packstones had no visible stain or cut with the rapidly decreasing grainstones having a fair amount of porosity and sample show. Through this interval as the angle of the well path had decreased to 89 degrees and the lithology remained in the packstones, it was interpreted that the well path was in a downward dipping hard streak of approximately one and one half to two foot thick. At the measured

depth of 6930' the well path was turned upward to move out of the hard streak and into what was interpreted to be the best porosity of the 1-B zone above the hard streak.

The well path was continued upward and the lithology graded into the fair oolitic to oomoldic limestone grainstone porosity with fair sample shows beginning at a measured depth of 6993', 5589.5' true vertical depth. This moderately good limestone grainstone continued to a measured depth of 7052', 5587.7' true vertical depth, and a horizontal displacement of 1475'. Upon reaching a measured depth of 7052', the well bore approached and bumped off the top of the 1-B porosity bench. After reevaluating the dip of the offsetting well to the east and west near the midpoint of this northwesterly lateral, it was determined that this was indeed the top of the 1-B zone and not another random hard streak. At this point the lateral was turned downward to move out of the thin hard streak and to drill through the hard streak near the top of the 1-B zone to reacquire the best porosity of the 1-B zone. The top of the 1-B zone was bumped and scraped from measured depths of 7052' to a measured depth of 7110', 5588' true vertical depth, with a tight, slightly oolitic, occasionally chalky to platy limestone packstone as the predominate lithology. As the well path continued downward, the thin one and one half to two foot thick, oolitic to oomoldic limestone grainstone, was penetrated from a measured depth of 7110' to a measured depth of 7151', 5590.5' true vertical depth, and a horizontal displacement of 1570'. The dense limestone packstone streak was encountered at the measured depth of 7151'. The lateral was continued downward through the hard streak, which had an apparent thickness of one foot, and very thin streaks of limestone grainstone. The top of the best porosity of the 1-B zone was encountered at a measured depth of 7211', 5593.8' true vertical depth and a horizontal displacement of 1631'.

As the well path penetrated the top of the best porosity of the 1-B zone, with an angle of 87°, a series of short slides were used to bring the angle to approximately 89.5°. As the top the best porosity in the 1-B zone was penetrated the lithology became a good oolitic to oomoldic limestone grainstone with only scattered traces of dense packstone. The limestone grainstones were light brown to tan to cream, with scattered dark browns, microcrystalline to very finely crystalline, with a granular to microsucrosic texture, occasionally anhydritic to a slight dolomite cement, and rare amounts of algal material. These grainstones had a fair to good intercrystalline to moderately fair oolitic porosity, a good bright yellow fluorescence, with a moderately fair brown stain and a slight trace to a trace of black bitchimum staining in the intercrystalline matrix and in the oolitic and molds. A moderately good slow to fair moderately fast streaming cut was noted in the samples. The rare scattered limestone packstones were white to cream, cryptocrystalline, dense, occasionally chalky and platy, very rarely oolitic, and slightly anhydritic, with no sample show. The well path was continued at a shallow downward angle in the good oolitic to oomoldic limestone grainstone to a measured depth of 7548', a true vertical depth of 5598.5', and a horizontal displacement of 1960'. At this point the lateral was allowed to slowly drift upward and level off at an average angle of 90°. Upon reaching the measured depth of 7620', 5598', with 2035' of vertical section, the downward dipping top of the 1-B zone was encountered. A drop in the angle of the well path was noted along with a very slight increase in dense, tight limestone packstone in the samples. The well path was continued in the predominately good oolitic to oomoldic limestone grainstone, with very minor amounts of packstone, and a very good sample show. As the lateral continued the top of the 1-B zone was encountered again at a measured depth of 7813', 5598.5' true vertical depth, after allowing the well path to again slowly drift upward. The well path was forced downward, away from the top of the 1-B porosity zone, and was continued within the good oolitic to oomoldic limestone grainstones until reaching a measured depth of 7887'. Upon reaching the measured depth of 7887', 5600.6' true vertical depth, and a horizontal displacement of 2300', on September 18, 1998, the lateral was terminated.

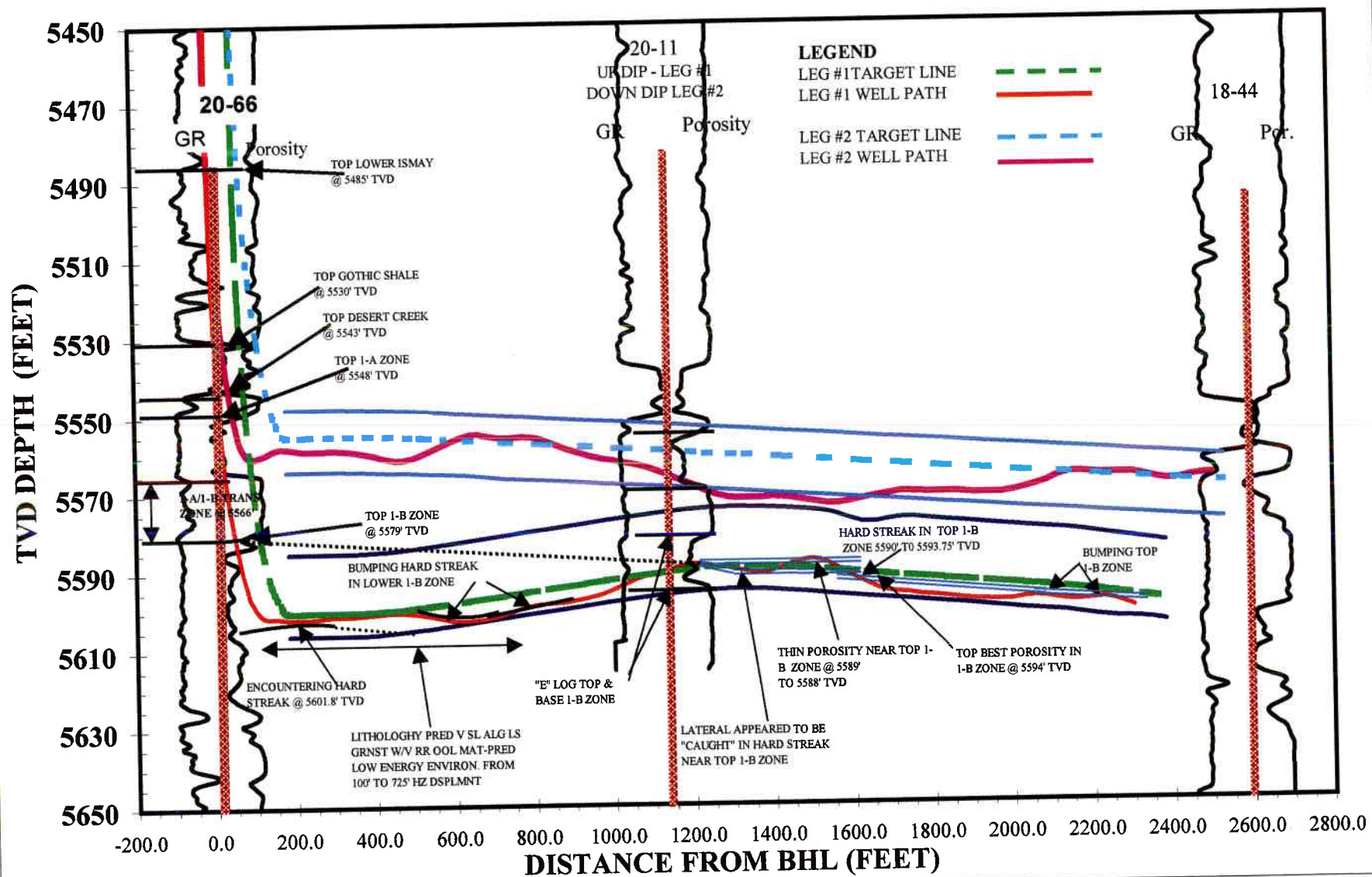
In tracking the lateral through the 1-B zone, in this northwesterly direction, two distinct lithology and environments were seen. Through the upper part of the 1-B zone in the curve section from true vertical depths of 5579' to 5599', the lithology was predominately the oolitic to oomoldic limestone grainstone of a fairly high energy environment. Near the termination of the curve section and for the first 633' of the lateral section, the lithology was a slightly algal to algal, microsucrosic and

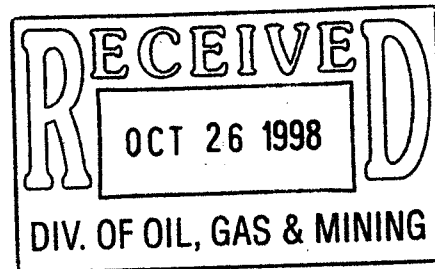
sucrosic limestone grainstone with good sample shows, which indicated a low energy environment. This lower energy environment was noted below a hard streak near the base of the 1-B zone. As the hard streak disappeared laterally, and the lateral rose above a true vertical of 5601', the lithology returned to the good oolitic to oomoldic, very slightly algal limestone grainstone of a higher energy environment. Throughout the lateral the limestone grainstone had good sample shows and a good intergranular porosity, with the algal grainstones having a slightly poorer sample show, and the oolitic to oomoldic grainstones having a moderate good to good oolitic porosity as well. Minor to significant decreases in the amount of porosity and increases in the tight dense limestone packstones was noted when the top or base of the zone, as well as the random tight streaks were encountered or penetrated. The lateral at its termination, was approximately 3' below the proposed target in very good oolitic to oomoldic limestone grainstone porosity, in the upper portion of the 1-B Desert Creek porosity zone. The well path was consistently below the proposed well path, as much as 5 feet, until reaching a horizontal displacement of approximately 1100', when the well path approached and tracked the target line to a horizontal displacement of approximately 1550'. Upon reaching the horizontal displacement of approximately 1550', the well path dropped below the proposed well and remained below the proposed well path to the laterals termination

From the beginning of the 20-66 northwest lateral leg #1 to its termination at a measured depth of 8298', 5552.7 true vertical depth and a horizontal displacement of 2870', the porosities appear to be well enough developed to enhance the overall performance of the R. U. 20-66 production well. The interval slightly algal to algal limestone grainstone, which had a slightly poorer sample show, will contribute to the overall performance, after acidization and returned to water flood. Of note; was that on trips, up to 20 barrels of fluid was lost, and a rather steady 1 to 2 barrels of fluid was lost while drilling until reaching a horizontal displacement of 1636' when the fluid lost became negligible.

*The black residual staining has been called by Dr. Dave Eby & others as "bitchimum" and is also known as "dead oil" ("dd o stn" on mud logs). This staining is associated with the movement of oil over long periods of time and is a good indicator of producible hydrocarbons when associated with productive porosities, but can also be found in porosities that have been filled by anhydrites and other material at later dates.

MOBIL, Ratherform Unit #20-66, Northwest Laterals





MOBIL

**RATHERFORD UNIT #20-66
NW HORIZONTAL LATERAL LEG #2
UPPER 1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 20, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
prepared by
LUKE TITUS
PASON/ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

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WELL SUMMARY

OPERATOR: MOBIL EXPLORATION & PRODUCTION U.S. INC.

NAME: RATHERFORD UNIT #20-66 NW HORIZONTAL LATERAL
LEG #2 IN 1-A UPPER POROSITY BENCH, DESERT CREEK

LOCATION: SECTION 20, T41S, R24E

COUNTY/STATE: SAN JUAN, UTAH

ELEVATION: KB:4797' GL:4785'

SPUD DATE: 9/12/98

COMPLETION DATE: 9/23/98

DRILLING ENGINEER: BENNY BRIGGS / SIMON BARRERA

WELLSITE GEOLOGY: MARVIN ROANHORSE/LUKE TIUS

**MUDLOGGING
ENGINEERS:** LUKE TITUS/MARVIN ROANHORSE

CONTRACTOR: BIG "A" RIG 25
TOOLPUSHER: J. DEES

HOLE SIZE: 4 3/4"

CASING RECORD: SIDETRACK IN WINDOW AT 5444' MEASURED DEPTH

DRILLING MUD: M-I
ENGINEER: RON WESTENBERG / MIKE PITTSINGER
MUD TYPE: FRESH WATER & BRINE WATER W/ POLYMER SWEEPS

**DIRECTIONAL
DRILLING CO:** SPERRY-SUN

ELECTICAL LOGGING: NA

TOTAL DEPTH: 8091' MEASURED DEPTH; TRUE VERTICAL DEPTH-5567'

STATUS: L.D. TOOLS-RIG DOWN-PREPARE TO MOVE RIG

DRILLING CHRONOLOGY
RATHERFORD UNIT #20-66
1-A NW HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	ACTIVITY
9/18/98	7465'	TD LEG #1	DRLG AHEAD & SRVYG T/7887';PMP SWP & CIRC OUT SMPLS-PMP 10 BBLS BRINE-TOH TO WINDOW-PMP 40 BBLS BRINE-TOH-LD LAT ASSEM.;P.U. SUPER HOOK-TIH-LATCH WHIPSTOCK-SHEAR-TOOH-LD SUPERHOOK;TIH W/OVERSHOT
9/19/98	7887'/ 5444'	0' (MILLING)	TIH W/OVERSHOT-PLUGGED PIPE;TOOH-DRY PIPE;TIH-CIRC BTMS UP-LATCHED FISH & SHEARED-TOOH-LD FISH;MU WHIPSTOCK #2-ORIENT-TIH;TOOH-PU STRTER MILL-TIH- SWIVEL UP & MILL F/5435' T/5437'-CUT 70' DRLG LINE-TOOH- LD STRTER MILL;PU WATERMELLON MILLS-TIH-SWIVEL UP & MILL F/5437' T/5444'-CIRC & SWEEP-HANG SWIVEL-LD 15 JNTS AOH;MU CRVE ASSEM-PU CRVE ASSEM-TEST-ORIENT- TIH
9/20/98	5444'	106'	TIH W/CRVE ASSEM-TAG BTM;FILL PIPE;RIG UP & RUN GYRO;TIME DRLG F/5444' T/5475'-PULL GYRO & RIG DOWN;DIR DRLG & SRVYG F/5550
9/21/98	5550'	734'	DIR DRLG & SRVYG T/5629';PMP 10 BBLS BRINE SWEEP & CIRC OUT;LD 78 JNTS AOH & TOOH;LD CRVE ASSEM-PU LAT ASSEM-TEST-ORIENT-TIH;
9/22/98	6284'	1478'	DRLG AHEAD & SURVEYING
9/23/98	7762'	TD	DRLG AHEAD & SURVEYING; TD NW LAT. LEG #2 @ 5:00 AM (MST);PMP SWP & CIRC OUT-L.D. 2 JNTS-TOOH TO WINDOW- PMP 20 BBLS BRINE-TOOH-L.D. LAT. ASSEM-P.U. SUPERHOOK-TIH;LATCH ONTO W/STOCK #2-TIH;PREPARE TO MOVE RIG

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #20-66 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
9/18/98	7456'	TD LEG #1			
9/19/98	7887'/5444'	0' (MILLING)			
9/20/98	5444'	106'			
9/21/98	5550'	734'			
9/22/98	6284'	1478'			
9/23/98	7762'	TD			

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-A HORIZONTAL LATERAL LEG #2

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1	4 3/4"	STC	MF3P	5444'/	185'	31.5	6
(RR)				5629'			
#2	4 3/4"	STC	MF3P	5629'/	2462'	41	60
				8091'			

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPT H	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
9/19/98	5435'	8.4	26	1	1	0/0	11.0	NC	NC	9000	120	1%	2%	97%
9/20/98	5445'	8.4	26	1	1	0/0	11.0	NC	NC	9000	160	1%	2%	97%
9/21/98	5629'	8.4	26	1	1	0/0	12.0	NC	NC	8700	120	1%	1%	98%
9/22/98	6720'	8.4	26	1	1	0/0	12.0	NC	NC	8000	80	1%	1%	98%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer : Mobil (Utah)
Platform .. : RAT HERFORD UNIT
Slot/Well .. : BA2 5/20-66 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5300	0.42	164.71	5299.83	25.42 S	3.84 W	-18.38	0
5435	0.41	151.3	5434.83	26.32 S	3.48 W	-19.33	0.07
5444	4.1	335	5443.82	26.06 S	3.6 W	-19.04	50.1
5454	8	345.81	5453.76	25.06 S	3.92 W	-18.04	40.46
5464	12.9	349.15	5463.59	23.29 S	4.3 W	-16.38	49.35
5474	17.8	350.77	5473.23	20.68 S	4.76 W	-14	49.18
5484	22.8	351.74	5482.61	17.25 S	5.28 W	-10.91	50.11
5494	27.4	352.4	5491.66	13.05 S	5.86 W	-7.16	46.08
5504	32	353.8	5500.35	8.13 S	6.46 W	-2.83	46.52
5514	36.3	355.9	5508.62	2.54 S	6.95 W	2	44.58
5524	40.6	356	5516.45	3.66 N	7.39 W	7.29	43
5534	45.7	354.8	5523.74	10.47 N	7.94 W	13.14	51.65
5544	50.6	357.2	5530.41	17.9 N	8.46 W	19.47	52.15
5554	53.5	353.3	5536.56	25.75 N	9.12 W	26.23	42.26
5564	57.3	352.9	5542.24	33.92 N	10.1 W	33.43	38.14
5574	62	352.1	5547.29	42.48 N	11.23 W	41.03	47.5
5584	67.1	352	5551.59	51.42 N	12.48 W	49.02	51.01
5594	72.5	351.8	5555.04	60.7 N	13.8 W	57.33	54.03
5604	77.5	351.7	5557.63	70.26 N	15.19 W	65.89	50.01
5629	89.6	349.8	5560.43	94.73 N	19.18 W	88.08	48.98
5671	93.4	346.5	5559.33	135.81 N	27.8 W	126.45	11.98
5702	91.1	343.8	5558.12	165.75 N	35.73 W	155.38	11.44
5734	88.9	340.1	5558.12	196.16 N	45.65 W	185.86	13.45
5765	89.3	337.5	5558.6	225.06 N	56.86 W	215.86	8.48
5797	90.2	336.1	5558.74	254.47 N	69.46 W	247.09	5.2
5828	90.3	334	5558.61	282.58 N	82.54 W	277.54	6.78
5860	89.7	334.5	5558.61	311.4 N	96.44 W	309.05	2.44
5891	89.3	335.2	5558.88	339.46 N	109.6 W	339.52	2.6
5923	89	335	5559.35	368.48 N	123.1 W	370.94	1.13
5955	88.4	335	5560.08	397.48 N	136.6 W	402.37	1.87
5986	88.6	334.3	5560.89	425.48 N	149.9 W	432.85	2.35
6018	90	334	5561.28	454.28 N	163.8 W	464.37	4.47
6050	92.3	334.7	5560.64	483.11 N	177.7 W	495.86	7.51
6082	92.3	333.3	5559.35	511.85 N	191.7 W	527.37	4.37
6114	92.7	332.4	5557.96	540.3 N	206.3 W	558.98	3.08
6145	92.4	332.2	5556.58	567.72 N	220.7 W	589.65	1.16
6177	92.1	332.1	5555.32	595.99 N	235.6 W	621.32	0.99
6209	89.8	331.5	5554.79	624.19 N	250.7 W	653.03	7.43

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer : Mobil (Utah)
Platform .. : RAT HERFORD UNIT
Slot/Well .. : BA2 5/20-66 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6241	88.2	331.2	5555.35	652.26 N	266.1 W	684.78	5.09
6273	90.1	331.9	5555.83	680.39 N	281.3 W	716.52	6.33
6304	90.3	332.2	5555.72	707.78 N	295.8 W	747.23	1.16
6336	90.4	332.8	5555.52	736.16 N	310.6 W	778.9	1.9
6368	88.2	332.8	5555.91	764.62 N	325.2 W	810.53	6.88
6400	87.2	331.9	5557.2	792.94 N	340.1 W	842.19	4.2
6432	88.2	332.2	5558.48	821.18 N	355.1 W	873.87	3.26
6463	88.1	331.3	5559.48	848.48 N	369.7 W	904.58	2.92
6495	88.2	330.5	5560.52	876.42 N	385.3 W	936.35	2.52
6527	89.1	330.3	5561.27	904.24 N	401.1 W	968.16	2.88
6559	88.9	328.5	5561.83	931.78 N	417.4 W	1000.02	5.66
6590	89	328.7	5562.4	958.23 N	433.5 W	1030.93	0.72
6622	88.6	328.4	5563.07	985.53 N	450.2 W	1062.83	1.56
6653	88.1	326.4	5563.96	1011.63 N	466.9 W	1093.77	6.65
6685	87.1	324	5565.3	1037.88 N	485.2 W	1125.73	8.12
6717	87.9	322.6	5566.69	1063.51 N	504.3 W	1157.7	5.04
6749	87.5	321	5567.98	1088.64 N	524 W	1189.64	5.15
6781	87	319.6	5569.51	1113.23 N	544.5 W	1221.53	4.64
6813	88.4	318.3	5570.8	1137.34 N	565.4 W	1253.36	5.97
6844	89.1	315.7	5571.47	1160.01 N	586.6 W	1284.11	8.68
6876	89.8	313.8	5571.78	1182.53 N	609.3 W	1315.66	6.33
6907	90.1	311	5571.81	1203.44 N	632.2 W	1346	9.08
6938	90.5	310.8	5571.65	1223.73 N	655.6 W	1376.16	1.44
6970	90	310.4	5571.51	1244.56 N	679.9 W	1407.26	2
7002	89.2	309.9	5571.73	1265.19 N	704.4 W	1438.3	2.95
7033	88.9	309.7	5572.24	1285.03 N	728.2 W	1468.31	1.16
7065	89	309.4	5572.83	1305.4 N	752.9 W	1499.26	0.99
7097	89.2	309.6	5573.33	1325.75 N	777.6 W	1530.21	0.88
7128	90.5	310.4	5573.41	1345.68 N	801.3 W	1560.25	4.92
7160	91.2	311	5572.94	1366.54 N	825.6 W	1591.36	2.88
7192	91.3	310.8	5572.24	1387.49 N	849.7 W	1622.49	0.7
7223	91.1	311	5571.59	1407.78 N	873.2 W	1652.65	0.91
7255	90.8	310.8	5571.06	1428.73 N	897.4 W	1683.78	1.13
7287	90.6	311.3	5570.67	1449.75 N	921.5 W	1714.93	1.68
7318	89.6	311.1	5570.62	1470.16 N	944.8 W	1745.13	3.29
7350	89.8	311.3	5570.78	1491.24 N	968.9 W	1776.31	0.88
7381	89.9	311.5	5570.86	1511.74 N	992.1 W	1806.53	0.72
7413	90.1	311.1	5570.86	1532.86 N	1016 W	1837.72	1.4

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer : Mobil (Utah)
Platform .. : RAT HERFORD UNIT
Slot/Well ... : BA2 5/20-66 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
7444	89.7	311.1	5570.92	1553.24 N	1040 W	1867.91	1.29
7475	89.7	310.6	5571.08	1573.52 N	1063 W	1898.06	1.61
7507	89.6	310.4	5571.28	1594.3 N	1087 W	1929.15	0.7
7539	90.4	311	5571.28	1615.17 N	1112 W	1960.26	3.13
7571	91.2	312.2	5570.83	1636.41 N	1136 W	1991.48	4.51
7602	91.2	312	5570.18	1657.19 N	1159 W	2021.78	0.65
7633	91.5	312.9	5569.45	1678.11 N	1181 W	2052.11	3.06
7665	92.3	313.8	5568.39	1700.06 N	1205 W	2083.52	3.76
7697	92.3	313.9	5567.1	1722.21 N	1228 W	2114.97	0.31
7729	90.5	312.5	5566.32	1744.11 N	1251 W	2146.37	7.13
7760	89.6	312.4	5566.3	1765.03 N	1274 W	2176.71	2.92
7792	89.7	312.2	5566.49	1786.57 N	1298 W	2208.02	0.7
7824	89.8	312.2	5566.63	1808.06 N	1321 W	2239.32	0.31
7856	90.2	312.4	5566.63	1829.6 N	1345 W	2270.62	1.4
7888	89.6	311.8	5566.69	1851.05 N	1369 W	2301.91	2.65
7919	88.2	311.5	5567.28	1871.65 N	1392 W	2332.15	4.62
7951	88.8	311.7	5568.12	1892.89 N	1416 W	2363.37	1.98
7983	90.2	312.2	5568.4	1914.28 N	1440 W	2394.63	4.65
8015	91.1	312.4	5568.04	1935.81 N	1463 W	2425.94	2.88
8046	91.3	312.9	5567.39	1956.81 N	1486 W	2456.3	1.74
8091	89.5	312	5567.07	1987.18 N	1519 W	2500.35	4.47

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.

N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.

TVD COORDINATE VALUES GIVEN RELATIVE TO HEAD.

THE VERTICAL SECTION ORIGIN IS WELL HEAD.

THE VERTICAL SECTION WAS COMPUTED ALONG 324.24 (TRUE).

CALCULATION METHOD: MINIMUM CURVATURE.

* 8091 EXTRAPOLATED TO BIT

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #15-12 NW 1-A HORIZONTAL LATERAL LEG #2

DEPTH	LITHOLOGY
5444.00 5460.00	"LS tan-ltbrn,ltgy,wh,occ brn,crpxl-sl micxl,cln-chk,sl anhy,pred dns-sl incr plty-mrly frag/depth,tr tan-ltbrn CHT,tt-v rr intxl POR,NFSOC,w/abnt orng-rust,blk pipe scale,rr SH blk,plty,frm,sl carb"
5460.00 5470.00	"LS crm-tan-ltgybrn,off wh,occ ltbrn,tr brn,crpxl-micxl,chk-sl anhy/tr POR fl-rr xln ANHY incl,sl mot ip,occ rthy-sl slty,rr mic fos-agl,tr CHT AA,tt-tr intxl POR,NFSOC,w/tr SH AA"
5470.00 5480.00	"LS ltgybrn-ltgy-wh,occ tan-ltbrn,rr brn,crpxl-micxl,chk-sl anhy AA,sl mot/pp blk SH,occ rthy-sl slty,tr thn plty frag,tr CHT AA,rr mic fos,tt-rr intxl POR,NFSOC,w/tr DOL dkbrn-brn,crpxl,arg,calc grd to dol LS,tt,NFSOC"
5480.00 5500.00	"LS lt-mgybrn,occ dkgybrn,ltbrn-brn,ltgy,rr off wh,crpxl-micxl,sl chk-anhy,blk SH mot-lam,rthy-slty,tr mrly frag,tr CHT AA,sl arg,v sl dol,POR AA,NFSOC,w/scat SH AA"
5500.00 5510.00	"LS AA,tt-rr intxl POR,NFSOC/incr SH,blk-dkbrnblk,blky-sbplty,dol-calc,occ grd to lmy arg shy DOL,sl carb"
5510.00 5530.00	"ring-rr slow stmg mlky CUT,w/tr DOL AA"
5510.00 5530.00	"LS lt-mgy,occ m-ltgybrn,tr brn-tan,micxl-vfxl-sl suc ip,tr crpxl,dns,rthy-slty-sl sdy ip,occ grd to v gr SS/lmy mtx,tr trns-lmky CHT incl,sl chk-anhy/tr POR fl & rr prtgs,tr blk SH lam,tt-rr frac POR,n-rr mod bri yel FLOR,n vis STN,v p dif/fnt res"
5530.00 5540.00	"DOL ltbrn-tan,crpxl-micxl-vfxl,sl suc ip,sl chky-anhy,occ rthy-sl slty,arg,tt-tr intxl-rr frac-agl POR,fr-mg scat mod bri yel FLOR,tr-fr ltbrn STN,fr slow stmg mlky CUT,intbd/LS AA,tt,NFSOC"
5540.00 5550.00	"DOL AA,bcmg micxl-suc,incr rthy-slty & arg ip,tt-fr intxl-sl agl POR,g even mod bri-spty bri yel FLOR,mg-fr ltbrn STN,g mod fast stmg mlky CUT,intbd w/decr LS AA,pred chky thn plty prtgs,NFSOC "
5550.00 5570.00	"SH blk-dkbrnblk,sbblky-sbplty-occ plty,frm-hd-m sft ip,carb,calc-sl lmy ip,tr pp mica,sooty,w/ LS & DOL AA,decr/depth"
5570.00 5580.00	"SH grd to LS & DOL,PCKST-ltbn-tn-crm,mic-vf xln,dns-tt mtx,sl chlky/rthy,DOL-dkbn-occ sl dolo ip;tr grn mtx-slty,spty mbri yelgld FLOR,no CUT,pr-ltbn mtx o STN;pred mf-f intrxln to compact xln fab POR"

DEPTH

LITHOLOGY

5580.00 5590.00 "LS,ltbn-tn-crm,v sl mott,mic-vf xln,dns-mdns mtx,pred sl chky sl ool rr foss frgs PCKST,tr mdns ool GRNST;pred mf-ltbn o STN,bri yelgld FLOR,fst to mf slo strmg CUT"

5590.00 5610.00 "LS AA,PCKST grdg to GRNST,ltbn-bn-tn,sl mott,mic-pred vf xln,mdns-grn mtx,sl ool,sl alg dev.,rr dns sl chky PCKST;pred ool interxln to fri oom/ooc fab POR,even mbri-bri yel FLOR,tr blk dd o STN,mf-mg ltbn o STN,f-fst to mg slo strmg blmg dif CUT"

5610.00 5629.00 "LS AA,poss sme alg development,sl vug fa POR ip,pred interxln/ool w/scat oom/ooc fab POR,blk dd o STN fld casts,tr calc frac flgs,v rr buf-ltbn CHT frgs,v rr carb prtgs,FLOR AA,CUT AA,pred mf-mg ltbn mtx o STN"

5629.00 5650.00 "LS,ltbn-bn-tn,mott,mic-pred vf xln,mdns-grn mtx,v sl dolo,pred ool rich oom/ooc GRNST,v sl chky,rr foss frgs;pred intrxln to reduced to mg-oom/ooc fab POR, g-sft tomg slo blmg dif CUT,pred mf-mg ltbn-bn o STN,tr blk dd o STN res"

5650.00 5680.00 "LS,ltbn-bn-occ crm,mott,mic-pred vf xln,mdns-grn-occ dns mtx,pred ool oom/ooc GRNST w/rr dns sl ool PCKST,tr calc fld casts,v sl dolo,rr buf CHT frgs;pred mf-mg oom/ooc fab POR to g-interxln fab POR,mf-slo strmg CUT,even mbri-bri yelgld FLOR,pred lbnostn"

5670.00 5700.00 "LS AA,pred ool rich GRNST,mf-mg tr reduced oom/ooc fab POR w/ tr dns PCKST-m-mf interxln fab POR,even mbri yelgld to spty bri FLOR,pred mf-mg ltbn o STN,mf-slo strmg dif CUT,v rr ANHY xls"

5700.00 5730.00 "yel FLOR,g brn-ltbrn/tr dkbrn-blk dd o STN,g mod fast-fast stmg mlky CUT"

5700.00 5730.00 "LS brn-ltbrn/tr crm incl,occ tan,tr wh,micxl-vfl-gran,occ sl micsuc,crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST,sl chky-anhy/tr plty prtgs-POR fl,v rr xln ANHY incl,sl dol/tr DOL cmt,g ool-oom/tr sl agl-intxl POR,g even mod bri-spty bri"

5730.00 5750.00 "LS AA,pred ool-oom GRNST,tr intbd-scat dns sl ool PKST,sl chky-anhy/tr plty prtgs-POR fl,v rr xln ANHY incl,sl dol/tr DOL cmt,g ool-oom/tr sl agl-intxl POR,g even mod bri-bri yel FLOR,g brn-ltbrn/scat dkbrn-blk dd o STN,g fast-mod fast stmg mlky CUT "

5750.00 5760.00 "LS AA,pred ool-oom GRNST/tr intbd-scat dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,POR-FLOR-STN-CUT AA"

DEPTH

LITHOLOGY

5760.00 5780.00 "LS brn-ltbrn/tr crm-off wh incl,occ tan,vfxl-gran-micsuc ip,occ micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST/tr gran tex,chk-sl anhy/tr POR fl-rr prtgs,dol/tr DOL rich cmt,POR-FLOR AA,g brn-ltbrn/scat dkbrn-blk dd o STN,g fast stmg mlky CUT"

5780.00 5790.00 "LS AA,ool-oom GRNST/tr intbd-occ scat PKST AA,sl chky-anhy/tr POR fl-plty prtgs,sl dol/tr DOL rich cmt,v rr crm CHT,POR-FLOR-STN AA,g mod fast-slow stmg mlky CUT"

5790.00 5800.00 "LS AA,ool-oom GRNST/tr PKST AA,sl incr chk-anhy/tr POR fl-xln ANHY-rr plty prtgs,dol/tr DOL rich cmt,v rr CHT AA,POR AA,g ltbrn-brn/sl decr dk brn-blk dd o STN,CUT AA"

5800.00 5810.00 "LS AA,ool-oom GRNST/tr dns sl ool PKST,sl chky-anhy/tr POR fl-v rr plty frag,rr xln ANHY,sl dol/tr DOL cmt,POR-FLOR-STN-CUT AA"

5810.00 5820.00 "LS AA,sl dol/rr DOL cmt,g ool-oom POR,g even mod bri-scat spty bri yel FLOR,g ltbrn-brn/tr scat dkbrn-blk dd o STN,g mod fast-fast stmg mlky CUT "

5820.00 5840.00 "LS brn-ltbrn/tr off wh-crm incl,tr tan,dkbrn,vfxl-gran-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST,sl chk-anhy/tr POR fl-rr xln ANHY,sl dol,g ool-oom POR,FLOR AA,g brn-ltbrn/tr dk brn-blk dd o STN,g fast stmg mlky CUT"

5840.00 5860.00 "LS AA,vfxl-gran-micsuc ip,tr micxl-crpxl,ool-oom GRNST/tr intbd-scat PKST AA,sl chk-anhy/tr POR fl-rr xln ANHY,sl dol,POR-FLOR AA,g brn-ltbrn/tr dk brn-blk dd o STN,g fast stmg mlky CUT"

5860.00 5880.00 "LS brn-ltbrn,occ dkbrn,tr tan,crm-off wh incl,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL rich cmt,g ool-oom POR,g even mod bri-spty bri yel FLOR,g brn-"

5860.00 5880.00 "ltbrn/tr dkbrn-blk dd o STN,g fast-mod fast stmg mlky CUT"

5880.00 5910.00 "LS brn-ltbrn,occ dkbrn,tan,tr crm-off wh incl,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST/tr gran tex,sl chky-anhy AA,dol/tr DOL cmt,rr crm-brn CHT,POR-FLOR AA,g brn-ltbrn/scat dkbrn-tr blk dd o STN,CUT AA"

5910.00 5941.00 "LS AA,ool-oom GRNST/tr intbd-occ scat PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL rich cmt,rr CHT AA,g ool-oom POR,FLOR-STN AA,g mod fast-fast stmg mlky CUT"

5940.00 5980.00 "spty bri yel FLOR,g brn-ltbrn-fr dkbrn/tr blk dd o STN,g fast-mod fast stmg mlky CUT"

DEPTH	LITHOLOGY
5940.00 5980.00	"LS ltbrn-brn,occ tan,tr crm-off wh incl,gran-vfxl-micsuc ip,tr micxl-crppl,ool-oom GRNST/tr intbd-scat dns sl ool PKST,sl dol/tr DOL cmt,sl chky-anhy/rr POR fl-xln ANHY,rr xl incl,g-mg ool-oom/tr intxl POR,g even mod bri-dull/scat"
5980.00 6000.00	"LS ltbrn-tan-crm,occ brn,rr wh,gran-vfxl-micsuc,tr micxl-crppl,pred ool-oom GRNST/tr PKST AA,chky-sl anhy/tr POR fl-rr xln ANHY,v rr plty frag-prtgs,v rr crm-bf CHT,sl dol ip,mg-g ool-sl oom POR,FLOR-STN AA,g fast-mod fast stmg mlky CUT"
6000.00 6020.00	"-tr brn-dkbrn-rr scat blk dd o STN,g-mg mod fast-slow stmg mlky CUT"
6000.00 6020.00	"LS tan-ltbrn,occ brn,crm,tr wh,vfxl-gran,occ sl micsuc,tr micxl-crppl,pred ool-sl oom GRNST,sl incr intbd-scat dns sl ool PKST/tr gran-vfxl tex,incr chky-sl anhy/tr POR fl-xln ANHY,tr-rr plty prtgs-frag,v rr CHT AA,sl dol,POR-FLOR AA,mg-g ltbrn"
6020.00 6040.00	"LS AA,pred ool-sl oom GRNST/tr PKST AA,chky-sl anhy/tr POR fl-prtgs,rr-tr xln ANHY,sl dol,POR AA,g even mod bri-spty bri yel FLOR,mg-fr ltbrn/tr scat brn-blk dd o STN,g fast stmg mlky CUT"
6040.00 6060.00	"LS tan-ltbrn,occ brn,tr crm,rr wh,dkbrn,gran-vfxl,occ sl micsuc,tr micxl-crppl,pred ool-sl oom GRNST,tr dns sl ool PKST/tr gran-vf xl tex,bcmg sl incr chky-sl anhy/tr POR fl-rr xln ANHY,v rr plty prtgs,sl dol,mg-g ool-tr oom POR,mg-g even dull-mod"
6040.00 6060.00	"bri/fr scat spty bri yel FLOR,mg-g ltbrn/tr brn & blk dd o STN,g fast-mod fast stmg mlky CUT"
6060.00 6080.00	"LS AA,gran-vfxl,occ micxl-crppl,tr micsuc ip,pred ool-sl oom GRNST,sl incr dns sl ool PKST/tr gran-vf xl tex,bcmg incr chky-sl anhy/tr POR fl-rr xln ANHY,v rr plty prtgs,sl dol,POR-FLOR-STN AA,g mod fast-slow stmg mlky CUT"
6080.00 6100.00	"LS AA,pred ool-sl oom GRNST/sl decr PKST AA,chky-sl anhy AA,tr xln ANHY,sl dol,POR AA,mg-g even dull-mod bri/scat spty bri yel FLOR,mg-fr ltbrn-rr brn/tr scat blk dd o STN,CUT AA"
6100.00 6140.00	"LS tan-ltbrn,occ crm,tr brn,wh,rr dkbrn,gran-vfxl,occ sl micsuc,tr micxl-crppl,pred ool-sl oom-tr agl GRNST,incr dns sl ool-agl PKST/tr gran-vf xl tex,incr chky-sl anhy/tr POR fl-xln ANHY,rr plty prtgs,sl dol,mg-g ool-tr oom POR,fr-tr dull-"
6100.00 6140.00	"mod bri/tr scat spty bri yel FLOR,fr-mg ltbrn-tr brn/rr blk dd o STN,mg fast stmg-slow mlky CUT"

DEPTH	LITHOLOGY
6140.00 6160.00	"LS AA,gran-vfxl,occ sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr dns sl ool-agl PKST/tr gran-vf xl tex,sl incr chky-sl anhy/tr POR fl-xln ANHY,v rr plty prtgs,n-v sl dol,mg-fr ool-tr oom & intxl POR,FLOR-STN AA,g fast-mod fast stmg mlky CUT"
6160.00 6190.00	"LS tan-ltbrn,occ crm,tr brn,rr wh,dkbrn,gran-vfxl-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST/tr PKST AA,sl chky-anhy/tr POR fl-xln ANHY,n-v sl dol ip,POR AA,mg-g even dull-mod bri/scat spty bri yel FLOR,mg-fr ltbrn/tr scat"
6160.00 6190.00	"brn & blk dd o STN,g fast stmg mlky CUT"
6190.00 6220.00	"LS tan-ltbrn-brn,occ crm,tr dkbrn,rr wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred GRNST AA/tr PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,n-v sl dol,POR-FLOR AA,mg-fr ltbrn/sl incr brn & blk dd o STN,g fast stmg mlky CUT"
6220.00 6240.00	"LS ltbrn-brn,occ tan,tr crm,rr wh,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST,n-v sl dol,chky-sl anhy/tr POR fl-rr xln ANHY,mg-g ool-oom/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,mg ltbrn-brn/fr blk STN,CUT AA"
6240.00 6260.00	"LS AA,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST/tr gran-vfxl tex,sl chky-anhy/tr POR fl-rr xln ANHY,n-v sl dol,mg-g ool-oom/tr intxl POR,FLOR-STN AA,g mod fast-fast stmg mlky CUT"
6260.00 6280.00	"LS AA,pred ool-sl oom GRNST,tr intbd dns sl ool PKST/tr gran-vfxl tex,sl chky-anhy/tr POR fl-rr xln ANHY,n-sl dol/rr DOL cmt strk,mg-g ool-sl oom/tr intxl POR,FLOR AA,g brn-ltbrn/tr blk dd o STN,g mod fast-fast stmg mlky CUT"
6280.00 6300.00	"LS AA,pred ool-sl oom GRNST/sl incr PKST AA,chky-sl anhy AA,tr xln ANHY,sl dol,POR AA,mg-g even dull-mod bri/scat spty bri yel FLOR,mg-fr brn-ltbrn/tr scat blk dd o STN,CUT AA"
6300.00 6330.00	"LS AA,gran-vfxl-sl micsuc,tr crpxl-micxl,ool-sl oom GRNST,tr dns sl ool PKST/tr vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/rr DOL cmt strk,POR-FLOR AA,g-mg brn-ltbrn/tr scat blk dd o STN,g mod fast-fr fast stmg mky CUT"
6330.00 6360.00	"LS AA,gran-vfxl,occ micxl-crpxl,tr micsuc ip,pred ool-sl oom GRNST,sl incr dns sl ool PKST/tr gran-vf xl tex,bcmg incr chky-sl anhy/tr POR fl-rr xln ANHY,v rr plty prtgs,sl dol,POR-FLOR-STN AA,g mod fast-slow stmg mlky CUT"
6360.00 6390.00	"LS AA,FLOR AA,CUT AA,o STN AA,pred mf-mg oom/oc fab POR w/sme interxln fab POR"

DEPTH	LITHOLOGY
6390.00 6420.00	"LS, ltbn-bn-rn,mott,mic-pred vf xln,mfnd-grn mtx,pred ool rich oom/ooc GRNST w/rr ool dns PCKST,v sl dolo;pred mg-oom/ooc fab POR w/interxln fab POR ip,mg-ltbn-bn o STN tr blk dd o STN,fst strmg dif CUT,g bri yelgld FLOR"
6420.00 6450.00	"LS AA,even mbri-spty bri yelgld FLOR,mf-fst to tr slo strmg dif milky CUT,pred mg-ltbn-bn mtx o STN w/tr blk dd o STN fld casts,mf-mg oom/ooc fab POR w/interxln fab POR ip"
6450.00 6480.00	"LS AA,tr dne ool rich sl ool dns PCKST, v slo chlky,tr microsuc mtx,v sl dolo,POR AA,FLOR AA,CUT AA,fst strmg milky CUT"
6480.00 6510.00	"LS,ltbn-tn-occ dkbn,mott,pred vf xln,mfnd-grn-sl microsuc mtx,pred ool rich oo GRNST,tr pel,v rr foss frgs,tr PCKST AA;pred ltbn-bn o STN,mf-mg fst strmg blmg CUT/milky ring,mbri yelgld FLOR"
6510.00 6540.00	"LS AA,pred ool rich oom/ooc GRNST, v sl dolo,rr buf CHT frgs,v rr carb mat,tr calc lds casts-occ anhy/chlky fld,FLOR AA,CUT AA,o STN AA,mf-mg oom/ooc fab POR w/interxln fab POR ip"
6540.00 6570.00	"LS,ltbn-bn-tn-occ crm,mott-sl mott,mic-pred vf xln,mdns-grn mtx,tr microsuc mtx,pred ool oom/ooc GRNST,rr calc frac flgs,sl chlky;pred g-oom/ooc fab POR w/interxln fab POR ip,g-bri yelgld FLOR,fst blmg CUT,pred ltbn-bn w/blk dd o STN res"
6570.00 6600.00	"LS AA,CUT AA,FLOR AA,o STN AA,pred GRNST,tr pel"
6600.00 6630.00	"LS,ltbn-bn,mott,mic-vf xln,mdns-grn mtx,pred ool rich oo/ooc GRSNT,tr dns sl ool to ool PCKST;pred mg-oom/ooc fab POR,mg-bn o STN tr blk res,g-mbri-bri yelgld FLOR,fst blmg dif CUT"
6630.00 6660.00	"LS AA,mg-g ltbn-pred bn o STN w/abunt blk dd o STN res flg ool/pel/foss casts,even mbri-bri yelgld FLOR,fast strmg blooming CUT,pred mg-oom/ooc w/tr cala/anhy fld casts,interxln fab POR ip"
6660.00 6690.00	"LS AA,pred bn ool rich oom/ooc GRNST,g-even mbri-bri yelgld FLOR,fst strmg blmg CUT,pred dkbn-bn o STN "
6690.00 6720.00	"LS,bn-dkbn-ltbn,mott,mic-vf xln,mdns-grn mtx,v sl dolo,v rr ANHY xls, v rr CHT frgs-ltbn/buf,pred oom/ooc GRNST tr dns sl ool/ool PCKST;pred mg-g oom/ooc fab POR w/interxln fab POR ip,mg-g dkbn-bn o STN w/scat blk dd o STN res,even bri yelgld FLOR"
6720.00 6750.00	"LS AA,FLOR AA,CUT AA,o STN AA"

DEPTH	LITHOLOGY
6750.00 6780.00	"LS,dkbn-bn,mott-sl mott,mic-pred vf xln,mdns-grn mtx,tr microsuc mtx,pred ool oom/ooc GRNST,rr calc frac flgs,sl chky;pred g-oom/ooc fab POR w/interxln fab POR ip,g-bri yelgld FLOR,fst blmg CUT,pred ltbn-bn w/blk dd o STN res"
6780.00 6810.00	"LS AA,pred bn-dkbn ool rich oom/ooc GRNST,g-even mbri-bri yelgld FLOR,fst strmg blmg CUT,pred mg-dkbn-bn o STN w blk dd o STN res flg casts"
6810.00 6840.00	"LS,ltbn-tn-occ dkbn,mott,pred vf xln,mfnd-grn-sl microsuc mtx,pred ool rich oo GRNST,tr pel,v rr foss frgs,tr PCKST AA;pred ltbn-bn o STN,mf-mg fst strmg blmg CUT/milky ring,mbri yelgld FLOR"
6840.00 6870.00	"LS AA,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST/tr gran-vfxl tex,sl chky-anhy/tr POR fl-rr xln ANHY,n-v sl dol,mg-g ool-oom/tr intxl POR,FLOR-STN AA,g mod fast-fast stmg mlky CUT"
6870.00 6900.00	"LS,dkbn-bn,mott-sl mott,mic-pred vf xln,mdns-grn mtx,tr microsuc mtx,pred ool oom/ooc GRNST,rr calc frac flgs,sl chky;pred g-oom/ooc fab POR w/interxln fab POR ip,g-bri yelgld FLOR,fst blmg CUT,pred ltbn-bn-dkbn w/blk dd o STN res"
6900.00 6930.00	"LS,bn-dkbn-ltbn,mott,mic-vf xln,mdns-grn mtx,v sl dolo,v rr ANHY xls, v rr CHT frgs-ltbn/buf,pred oom/ooc GRNST tr dns sl ool/ool PCKST;pred mg-g oom/ooc fab POR w/interxln fab POR ip,mg-g dkbn-bn o STN w/scat blk dd o STN res,even bri yelgld FLOR"
6930.00 6960.00	"LS AA,FLOR AA,CUT AA,o STN AA,pred mg-g oom/ooc fab POR w/interxln fab POR ip"
6960.00 6990.00	"LS AA,pred bn ool rich oom/ooc GRNST w/tr dns ool PCKST,g-even mbri-bri yelgld FLOR,fst strmg blmg CUT,pred dkbn-bn o STN "
6990.00 7020.00	"LS dkbrn-brn-occ ltbrn,tr tan,sl tr crm incl,vfxl-gran-sl micsuc,micxl-sl crpxl,pred ool-sl oom-occ dns GRNST,tr scat-dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL rich cmt,g ool-sl oom/tr intxl POR,g-mg"
6990.00 7020.00	"even mod bri/scat bri yel FLOR,g brn-dkbrn/tr blk dd o STN,g fast stmg-sl blooming CUT"
7020.00 7050.00	"LS AA,pred ool-oom-sl oom GRNST,tr scat-occ intbd dns sl ool PKST/tr vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL rich cmt,g ool-sl oom/tr intxl POR,g-mg even mod bri-dull/scat bri yel FLOR,g mod fast-fast stmg/tr sl blooming CUT "
7050.00 7080.00	"AA,g mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY
7080.00 7110.00	"LS brn-dkbrn,occ ltbrn-tan,tr crm-off wh incl,vfxl-gran-micsuc,occ micxl-sl crpxl,pred ool-sl oom-tr dns GRNST,tr scat dns sl ool PKST/vfxl-gran tex,sl incr chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,POR-FLOR-STN AA,g mod fast-sl blooming mlky CUT"
7110.00 7140.00	"LS AA,vfxl-gran-micsuc,occ micxl-sl crpxl,pred GRNST AA,tr scat dns sl ool PKST/vfxl-gran tex,mod chky-sl anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,POR AA,g even mod bri-occ dull/incr bri yel FLOR,STN AA,g fast stmg-sl blooming mlky CUT"
7140.00 7170.00	"brn-dkbrn-fr ltbrn/tr blk dd o STN,g fast stmg-blooming mlky CUT "
7140.00 7170.00	"LS brn-dkbrn-ltbrn,tr tan,rr crm-off wh incl,vfxl-gran-micsuc,occ micxl-sl crpxl,pred ool-sl oom GRNST,tr PKST AA,chky-slanhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,g ool-sl oom/tr intxl POR,mg-g mod bri-dull/scat bri yel FLOR,g"
7170.00 7190.00	"LS AA,vfxl-micsuc-gran,occ micxl-sl crpxl,pred GRNST AA/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/rr POR fl-v rr xln ANHY,sl dol/tr DOL cmt,POR AA,g even mod bri-dull/scat bri yel FLOR,STN AA,g fast stmg-blooming mlky CUT"
7190.00 7220.00	"LS AA,pred ool-ool-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy AA,bcmg sl incr dol/tr DOL cmt,POR AA,FLOR AA/sl incr scat bri yel FLOR,STN AA,g fast stmg-blooming mlky CUT"
7220.00 7250.00	"LS brn-dkbrn,occ ltbrn,rr tan,crm-off wh incl,vfxl-micsuc-gran,occ micxl-sl crpxl,pred GRNST AA,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,g ool-sl oom/tr intxl POR,g even mod bri-bri yel"
7220.00 7250.00	"FLOR,g brn-dkbrn/tr scat blk dd o STN,g mod fast-fast stmg mlky CUT"
7250.00 7280.00	"LS AA,vfxl-micsuc-gran,occ micxl,tr crpxl,pred GRNST AA,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY-v rr plty prtgs,dol/tr DOL cmt-strk,POR-FLOR-STN AA,g fast stmg-blooming mlky CUT"
7280.00 7310.00	"bri yel FLOR,g brn-dkbrn/tr blk dd o STN,g fast stmg-blooming mlky CUT"
7280.00 7310.00	"LS brn-lt-dkbrn,occ tan,tr crm-off wh incl,vfxl-gran-micsuc,occ micxl-sl crpxl,pred ool-ool-sl oom GRNST/tr dns gran strk,tr scat dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,POR AA,g-mg mod bri-scat"

DEPTH	LITHOLOGY
7310.00 7340.00	"LS AA,vfxl-gran-micsuc,occ micxl-sl crpxl,pred ool-ooc-sl oom GRNST,tr scat dns sl ool PKST/gran tex,sl chky-anhy/sl tr POR fl-rr xln ANHY,dol/tr DOL cmt,POR AA,g even mod bri-bri yel FLOR,STN AA,g fast stmg mlky-sl blooming CUT"
7340.00 7370.00	"LS brn-dkbrn,occ ltbrn,tr crm-off wh incl,vfxl-gran-micsuc,occ micxl-sl crpxl,pred GRNST AA,tr dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY & plty prtgs,sl dol/tr DOL cmt,POR-FLOR-STN AA,g fast stmg-blooming mlky CUT"
7370.00 7400.00	"LS AA,vfxl-micsuc-gran,occ micxl-sl crpxl,pred ool-sl oom-ooc GRNST/tr dns strk,tr intbd-scat PKST AA/vfxl-gran tex,v sl chky-anhy/sl tr POR fl-v rr xln ANHY,dol/tr DOL cmt,POR AA,g even mod bri-dull/tr scat bri yel FLOR,STN-CUT AA"
7400.00 7420.00	"LS AA,pred ool-sl oom-ooc GRNST/tr dns strk,tr intbd-scat dns sl ool PKST/vfxl-gran tex,v sl chky-anhy/sl tr POR fl-v rr xln ANHY,dol/tr DOL cmt,POR-FLOR AA,g brn-dkbrn/sl tr blk dd o STN,g fast stmg-sl blooming mlky CUT"
7420.00 7450.00	"POR,g even modbri-dull/scat bri yel FLOR,g brn-dkbrn/tr ltbrn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
7420.00 7450.00	"LS brn-dk-ltbrn,tr tan-crm,off wh incl,vfxl-micsuc-gran,tr micxl-sl crpxl,pred ool-ooc-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,g ool-sl oom/tr ooc-intxl"
7450.00 7480.00	"LS brn-dk-ltbrn,tr tan,crm-off wh incl,vfxl-micsuc-gran,tr micxl-sl crpxl,pred ool-ooc-sl oom GRNST/tr dns strk,tr PKST AA/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,POR-FLOR-STN AA,g mod fast-fast stmg mlky CUT"
7480.00 7510.00	"LS AA,pred ool-ooc-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl incr chky-sl anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,g ool-sl oom/tr intxl-rr ooc POR,FLOR-STN AA,g mod fast stmg-blooming mlky CUT"
7510.00 7550.00	"FLOR,g brn-ltbrn-tr dkbrn & blk dd o STN,g fast-mod fast stmg mlky CUT "
7510.00 7550.00	"LS brn-lt-dkbrn,tr tan,rr off wh incl,vfxl-micsuc-gran,tr micxl,rr crpxl,pred ool-ooc-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,g ool-sl oom/tr ooc-intxl POR,g even mod bri-scat bri yel"
7550.00 7630.00	"dull/scat bri yel FLOR,g-mg brn-ltbrn/scat dkbrn & blk dd o STN,g fast stmg-sl blooming mlky CUT"

DEPTH	LITHOLOGY
7550.00 7630.00	"LS brn-lt-dkbrn, tr tan, crm-off wh incl, vfxl-micsuc-gran, tr micxl-crpxl, pred ool-ooc-sl oom GRNST/tr dns strk, tr scat-occ intbd dns sl ool PKST/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, dol/tr DOL cmt, g ool-sl oom/tr ooc-intxl POR, g even mod bri-"
7580.00 7610.00	"LS AA, vfxl-micsuc-gran, tr micxl-sl crpxl, pred ool-ooc-sl oom GRNST/tr dns strk, tr scat dns sl ool PKST/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, dol/tr DOL cmt, g ool-sl oom/tr ooc-intxl POR, FLOR-STN-CUT AA"
7610.00 7630.00	"LS AA, pred ool-ooc-sl oom GRNST, tr dns sl ool PKST/tr gran tex, sl chky-anhy/tr POR fl-v rr xln ANHY, dol/tr DOL cmt, POR-FLOR AA, g ltbrn-brn/tr scat dkbrn & blk dd o STN, g fast stmg-sl blooming mlky CUT"
7630.00 7670.00	"LS brn-ltbrn, tr tan, dkbrn, crm-off wh, vfxl-micsuc-gran, tr micxl, rr crpxl, pred ool-ooc-sl oom GRNST/tr dns strk, tr scat PKST AA/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, sl dol/tr DOL cmt, g ool-oom/tr ooc-intxl POR, g even"
7630.00 7670.00	"mod bri-bri yel FLOR, g ltbrn-brn/tr dkbrn-blk dd o STN, g fast-sl blooming CUT"
7670.00 7700.00	"LS ltbrn-brn-dkbrn, tr tan, rr crm-off wh, vfxl-micsuc-gran, tr micxl, rr crpxl, pred ool-ooc-sl oom GRNST/tr dns strk, tr PKST AA/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, dol/tr DOL cmt, POR-FLOR AA, g ltbrn-brn/tr dkbrn & blk dd o STN, CUT AA"
7700.00 7710.00	"LS AA, pred GRNST AA, tr PKST AA, dol/tr DOL cmt, POR-FLOR-STN-CUT AA"
7710.00 7730.00	"LS AA, vfxl-micsuc-gran, tr micxl, rr crpxl, ool-ooc-sl oom GRNST, tr scat dns sl ool PKST/vfxl-gran tex, sl chky-anhy/rr POR fl-xln ANHY, dol/tr DOL cmt, g ool-sl oom/tr ooc-intxl POR, g even mod bri-bri yel FLOR, g brn-ltbrn/tr scat brn & blk dd o STN, CUT AA"
7730.00 7760.00	"yel FLOR, STN AA, g fast stmg-sl blooming CUT"
7730.00 7760.00	"LS ltbrn-brn-dkbrn, rr tan, crm-off wh, vfxl-micsuc-gran, tr micxl-sl crpxl, pred ool-ooc-sl oom GRNST/occ dns strk, tr scat dns sl ool PKST/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, dol/tr DOL cmt, POR AA, g even mod bri-bri "
7760.00 7790.00	"LS AA, vfxl-micsuc-gran, tr micxl-sl crpxl, pred GRNST AA, tr scat dns sl ool PKST/vfxl-gran tex, sl chky-anhy/tr POR fl-rr xln ANHY, dol/tr DOL cmt, POR-FLOR AA, g ltbrn-brn/tr scat dkbrn & blk dd o STN, g fast stmg mlky CUT"

DEPTH	LITHOLOGY
7790.00 7810.00	"LS brn-ltbrn,occ dkbrn,tr tan,rr crm,vfxl-micsuc-gran,tr micxl-crpxl,pred ool-ooc-sl oom GRNST/tr dns strk,tr PKST AA/vfxl-gran tex,sl chky-anhy AA,dol/tr DOL cmt,g ool-sl oom/tr ooc-intxl POR,g-mg even mod bri-dull/scat bri yel FLOR,STN-CUT AA,"
7810.00 7830.00	"stmg-sl blooming mlky CUT"
7810.00 7830.00	"LS AA,ool-ooc-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,g ool-sl oom/tr ooc-intxl POR,g even mod bri-dull/scat bri yel FLOR,g ltbrn-brn/tr scat dkbrn & blk dd o STN,g"
7830.00 7860.00	"LS,dkbn-bn,mott-sl mott,mic-pred vf xln,mdns-grn mtx,tr microsuc mtx,pred ool oom/ooc GRNST,rr calc frac flgs,sl chlky;pred g-oom/ooc fab POR w/interxln fab POR ip,g-bri yelgld FLOR,fst blmg CUT,pred ltbn-bn w/blk dd o STN res"
7860.00 7890.00	"LS,bn-dkbn-ltbn,mott,mic-vf xln,mdns-grn mtx,v sl dolo,v rr ANHY xls, v rr CHT frgs-ltbn/buf,pred oom/ooc GRNST tr dns sl ool/ool PCKST;pred mg-g oom/ooc fab POR w/interxln fab POR ip,mg-g dkbn-bn o STN w/scat blk dd o STN res,even bri yelgld FLOR"
7890.00 7920.00	"LS,dkbn-bn,mott-sl mott,mic-pred vf xln,mdns-grn mtx,tr microsuc mtx,pred ool oom/ooc GRNST,rr calc frac flgs,sl chlky;pred g-oom/ooc fab POR w/interxln fab POR ip,g-bri yelgld FLOR,fst blmg CUT,pred ltbn-bn w/blk dd o STN res"
7920.00 7950.00	"LS AA,vfxl-micsuc-gran,tr micxl-sl crpxl,pred ool-ooc-sl oom GRNST/tr dns strk,tr scat dns sl ool PKST/vfxl-gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,g ool-sl oom/tr ooc-intxl POR,FLOR-STN-CUT AA"
7950.00 7980.00	"LS AA,CUT AA,FLOR AA,o STN AA,pred GRNST,rr dns ool PCKST"
7980.00 8010.00	"LS AA,gran-vfxl-micsuc ip,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns sl ool PKST/tr gran-vfxl tex,sl chky-anhy/tr POR fl-rr xln ANHY,n-v sl dol,mg-g ool-oom/tr intxl POR,FLOR-STN AA,g mod fast-fast stmg mlky CUT"
8010.00 8040.00	"LS AA,pred ool-ooc-sl oom GRNST,tr dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-v rr xln ANHY,pred oom/ooc w/tr interxln fab POR ip, even mbri-bri yel FLOR,g ltbrn-brn/tr scat dkbrn & blk dd o STN,g fast stmg-sl blooming mlky CUT"
8040.00 8070.00	"LS dkbrn-brn-occ ltbrn,vfxl-micxl-gran,sl micsuc,pred ool-oom GRNST,POR AA,FLOR AA,o STN AA"
8070.00 8091.00	"LS AA,pred bn ool rich oom/ooc GRNST,g-even mbri-bri yelgld FLOR,fst strmg blmg CUT,pred dkbn-bn o STN "

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #20-66 NW 1-A HORIZONTAL LATERAL LEG #2

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4797'
LOWER ISMAY		5489'	5487'	-690'
GOTHIC SHALE		5544'	5530'	-733'
DESERT CREEK		5565'	5542'	-745'
UPPER 1-A POROSITY BENCH		5576'	5548'	-751'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #20-66 Northwest Horizontal Lateral Leg #2 was a re-entry of the Mobil Ratherford Unit #20-66 located in Section 20, T41S, R24E, and was sidetracked in a northwesterly direction from 5444' measured depth, 5443' true vertical depth, on September 20, 1998. The lateral reached a measured depth of 8091', true vertical depth of 5567' at total depth, with a horizontal displacement of 2500' and true vertical plane of 312 degrees on September 23, 1998. The lateral was terminated in the 1-A porosity bench in the Upper Desert Creek Member of the Paradox Formation. The curve and lateral were drilled with fresh water and brine water with polymer sweeps as the drilling fluid. The proposed target line was used as a reference point throughout the lateral and a gamma-neutron log was used to define contacts through the curve section.

The objective of the Ratherford Unit #20-66 Northwest lateral leg #2 was to penetrate and maintain the Desert Creek 1-A porosity bench for 2500' horizontally. Evaluation of porosity and effective permeability, various carbonate facies, hydrocarbon and gas potential and lithology was defined throughout the lateral as well as its overall thickness. The curve section began in the Pennsylvanian Upper Ismay carbonate cycle before encountering the typical stratigraphic section of the Lower Ismay carbonate cycle, Gothic Shale, Desert Creek transition zone and Upper 1-A porosity bench of the Upper Paradox Formation of the Hermosa Group. Original paperwork called for the bit to penetrate at a bearing of North 25° West for 1377' of vertical section. The bit would then be oriented to North 70° West for 650' of vertical section and then back to North 42° West for the remainder of the lateral so that communication with the 20-11 well bore and southeast lateral leg off the 18-43 well bore would be avoided. However, after the curve section was completed these bearings were changed to a slow continuous turn from North 10° West to North 25° West for 974' of vertical section. At this point sliding for 284' to a bearing of North 48° West was made and the remainder of the lateral was drilled along this plane. Changes from the original plan were made because it was thought that it would be a more effective path and put the bit even further from the 20-11 well bore and the southeast lateral leg off the 18-43 well bore.

The curve section began in the lower half of the Upper Ismay carbonate cycle of the Upper Paradox Formation and was penetrated from a measured depth of 5444', true vertical depth 5443', to a measured depth of 5489', true vertical depth 5487'. This lower 44' of the Upper Ismay Formation was a predominately clean to occasionally earthy limestone. This limestone was light brown, brown, light gray brown, medium gray brown, light gray to tan, cryptocrystalline to microcrystalline, dense, slightly silty, slightly chalky to anhydritic, occasionally earthy grading to a marly limestone in part, occasionally mottled, slightly platy and slightly dolomitic. Associated with this facies was rare to trace amounts of dark brown chert fragments, rare micro-fossils, anhydrite crystals, trace dark brown to brown dolomites and rare to trace dark brown to black carbonaceous shale partings. No visible cut, oil stain or fluorescence was noted through this basal section of the Upper Ismay, but exhibited an intercrystalline to compact crystalline fabric porosity development. The contact between the Upper and Lower Ismay was marked by the Hovenweep Shale, which was represented in the samples as a dark brown to black, slightly silty carbonaceous shale. This member was approximately one to two feet thick in this northwesterly curve.

The top of the Lower Ismay member of the Upper Paradox Formation was picked at a measured depth of 5489', true vertical depth 5487', based primarily on sample identification and projected tops based on the gamma-neutron log. This carbonate cycle was 43 feet thick at this location and was predominately silty limestone that was infrequently dolomitic in part. This limestone cycle light gray, medium gray, light gray brown, brown to tan, microcrystalline to very fine crystalline, slightly sucrosic, moderately dense to dense, silty grading to sandy in part, occasionally earthy to argillaceous, slightly chalky and anhydritic. Trace amounts of translucent to milky chert fragments, anhydrite crystals, rare black shale partings, chalky to anhydrite and calcite fracture fill, dark brown dolomite grading to a limey argillaceous dolomite and trace dolomitic limestones was associated with this carbonate facies. No visible staining, cut and fluorescence was noted in the upper portion of the Lower Ismay, but a trace to moderately fair light brown matrix oil stain, scattered moderately bright yellow fluorescence and a rare slow streaming very slightly diffused cut was logged at the base of the cycle. An increase in carbonaceous shale partings was noted as the bit penetrated the contact between the Lower Ismay and Gothic Shale member of the Upper Paradox Formation.

The Gothic Shale was penetrated at a measured depth of 5544', true vertical depth 5530' through a measured depth of 5565', true vertical depth 5542'. The top of the Gothic was picked by a decrease in the penetration rate and a significant increase in the amount of black carbonaceous shale in the cuttings. This shale member was twelve feet thick in this northwesterly direction and was black to dark brown, carbonaceous, occasionally grainy to silty, soft to slightly firm, sooty, slightly fissile, subblocky to subplaty, calcareous to slightly dolomitic and slightly micaceous. Very thin cyclic deposits of dense slightly argillaceous, occasionally dolomites to dolomitic limestones were associated with this shale member. The gamma-neutron log and samples picked the contact between the Gothic Shale because it was not represented in the rate of penetration.

The top of the Desert Creek Member of the Upper Paradox Formation was picked at a measured depth of 5565', true vertical depth 5542' through a measured depth of 5576', true vertical depth 5548'. This transition zone had a true vertical thickness of approximately six feet. The transition zone between the Gothic Shale and the top of the Upper Desert Creek 1-A porosity zone was predominately a dense limestone with thinly interbedded dolomites. The predominate limestones were a packstone facies, light brown, tan to cream, microcrystalline to very fine crystalline, moderately dense to tight, very slightly oolitic, occasionally slightly dolomitic, chalky to slightly anhydritic with a trace grainy to silty matrix. Associated with this limestone facies were slightly sucrosic dark brown dolomites grading to dolomitic limestone, rare fossil fragments rare light brown chert fragments and trace amounts of Gothic Shale. An intercrystalline to compact crystalline fabric porosity was developed in this transition zone, no visible cut, a poor spotty yellow-gold fluorescence and a poor light brown matrix oil stain was exhibited in these Pennsylvanian carbonates.

The top of the Desert Creek Upper 1-A porosity zone was encountered at a measured depth of 5576', true vertical depth of 5548', at a horizontal displacement of approximately 45'. The top was picked based on a marked drill off and background gas. The predominate grainstone facies had a fair intercrystalline to oolitic fabric porosity. Trace to abundant reduced to moderately fair oomoldic to oolitic with a slightly developed vuggy or algal fabric porosity was noted, too. This homogenous grainstone facies was light brown, brown, tan to cream, slightly mottled, microcrystalline to predominately very fine crystalline, moderately dense to grainy, very slightly dolomitic and occasionally chalky and anhydritic. Rare buff to light brown chert fragments, very rare fossil fragments, rare to trace anhydrite crystals, a slightly developed *Ivanovia* algal texture, trace calcite fracture fill and rare carbonaceous partings was associated with this portion of the Desert Creek 1-A porosity bench. Overall, oil staining was a moderately fair to moderately good light brown matrix oil stain and associated with a black residue or bitchimum filling oolitic and fossil casts. A moderately bright to bright even yellow-gold fluorescence and fair fast to moderately good slow streaming blooming cut was observed in this grainstone facies.

The curve portion of the lateral was completed at a measured depth of 5629', true vertical depth 5560', at a horizontal displacement of 88', bearing 351.7 degrees, with an inclination of 90.0 degrees, on September 21, 1998, in the Desert Creek 1-A porosity bench of the Upper Paradox Formation. At this point a trip was made to lay down the curve assembly and pickup the lateral assembly.

Drilling of the northwest lateral was resumed also on September 21, 1998, near the base of the Desert Creek 1-A porosity bench of the Upper Paradox Formation. Approximately 155' of sliding was required to put the lateral assembly out far enough to rotate and to begin to turn west. During this slide the bit glanced off hard stringer #1 at a true vertical depth 5560' at a vertical section of 160' and immediately turned up. As the bit turned up and began to cut across the 1-A bench it glanced off another stringer, herein noted as #2, at a true vertical depth 5558' at a vertical section of 200' and leveled off. The bit maintained a horizontal state for the next 270' of vertical section before encountering stringer #1 again and turning up. This glance off stringer #1 forced the bit to 92 degrees and it penetrated across the bench. It should be noted that the best porosity in the 1-A bench was near the top and the bit was left at this angle to reach this better portion. The bit never penetrated stringer #2 coming across the bench, but encountered stringer #3 or the top of the Desert Creek 1-A porosity bench at a true vertical depth of 5555' at a vertical section of 660' and leveled out. It was not clear on whether or not it was stringer #3 or the top until the bit took a strong glance down at a true vertical depth of 5555' at a vertical section of 800'. It is suggested by the continuous dip of 88.5 degrees that the top was coming down. The bit followed this 88.5 degree plunge for 400' of vertical section then leveled out by itself and began to walk right indicating that the bottom was close at a true vertical depth of 5571' at a vertical section of approximately 1300'.

It was not clear now what direction the bit was going to go based on its movement down and along the top of the bench. Three-dimensional modeling and gamma-neutron logs between the 20-66 and 18-44 well bores insinuated that the Desert Creek 1-A porosity bench was almost flat. However, this extrapolation may have been based on vertical planes that lined the two wells up and surrounding wells along the same bearing and did not consider that the bit would be outside of these drilling parameters. Compilation of previous data from the 18-43 southeast lateral in the 1-A bench showed an altogether downward trend and a very sharp drop in an area where the bit was heading too in the 20-66 northwest leg #2. Based on this, an upward trend was looked for as the remainder of the lateral was drilled.

After the bit leveled out from its drop and began to penetrate out horizontally, it drilled the true vertical depths of 5571' through 5573' from 1300' to 1600' vertical section. The bit either glanced off the bottom or a stringer at 5573.5' true vertical depth at a vertical section of 1600'. It then climbed up at 91 degrees for 150' was brought to horizontal and penetrated for 210' of vertical section. At approximately 1970' of vertical section the bit glanced up off the bottom or a stringer at 5571' true vertical depth and climbed at 91.5 degrees for 155' of vertical section. At a true vertical depth of 5567' at a vertical section of 2125' the bit leveled off and drilled horizontal for the remainder of the northwest lateral leg #2. The upward trend of the bit mimicked what was thought to happen based on the compiled data of the 18-43 southeast lateral leg in the Desert Creek 1-A porosity bench.

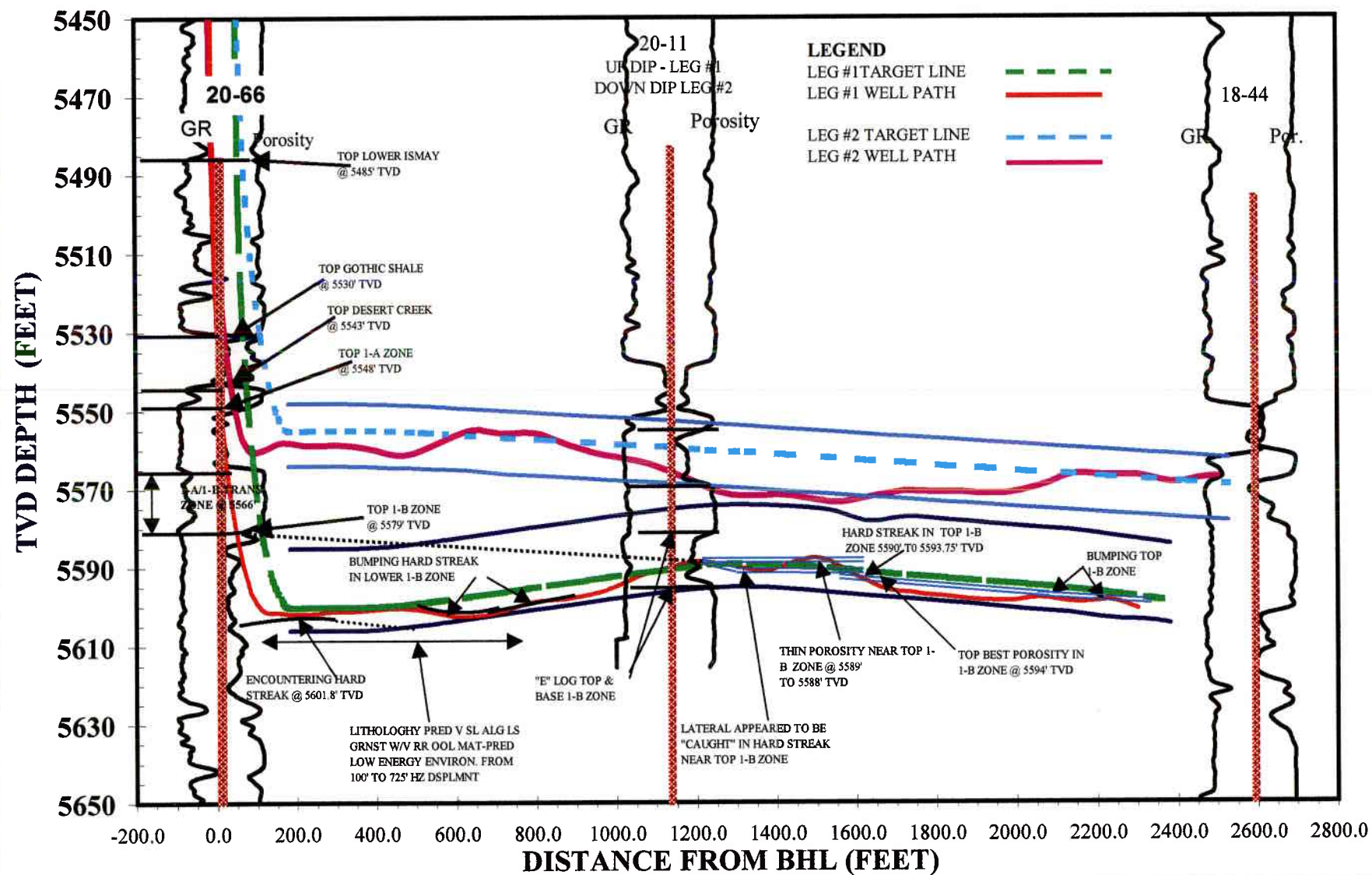
From the time the northwest lateral leg #2 kicked-off at 5629' measured depth to its termination at 7091' measured depth; the Desert Creek 1-A porosity bench was homogenous limestone. This grainstone facies was dark brown, brown, light brown, tan to cream, slightly mottled to mottled, microcrystalline to predominately very fine crystalline, firm, moderately dense, microsucrosic to granular, very slightly chalky and anhydritic and very slightly dolomitic to slightly dolomitic. Abundant oolites and pellets, that were occasionally filled with calcite, anhydrite or chalky matter, fossil fragments, rare light brown to buff chert fragments, rare black carbonaceous matter, rare crystalline anhydrite, trace calcite fracture fill and rare off-white chalky matter were associated with this grainstone facies. Only minor amounts of dense slightly oolitic to oolitic, dense, slightly chalky and slightly anhydritic, occasionally platy packstones represented the various hard stringers

encountered by the bit. Rare to trace amounts of packstones in the samples was also evidence for very thin streaks developed with the prominent grainstone in the Desert Creek 1-A porosity bench. Minor amounts of packstones in the samples may also have to do with the fact that the bit stayed in zone for the entire length of the lateral. A moderately fair to good dark brown, brown to light brown oil stain associated with a black dead or bitchimum resin filled fossil, oolite and pellet casts was clear in the grainstones. An even dull to very bright yellow-gold fluorescence and a fast blooming to slow moderately fair to good streaming diffused milky ring cut was predominate throughout this homogenous interval. A slight increase in dark brown matrix staining was noted once the bit penetrated out and around the 20-11 well bore. A reduced to good oomoldic to oolitic with an intercrystalline fabric porosity development in part was consistent throughout the lateral and is what is expected for the Desert Creek 1-A porosity bench. It should be noted that in the curve section when the bench was first penetrated the grainstone facies had a slight vuggy or *Ivanovia* algal development. However, once the lateral was begun, this fabric porosity was not evident in the northwest lateral and is suggested to be developing in a southeast direction instead.

The entire 2500' of horizontal displacement in the Desert Creek 1-A porosity bench was penetrated in 41 hours, included sliding to prevent communication with the 20-11 well bore and southeast trending 18-43 lateral. The well only ended up taking three barrels an hour on the average. The northwest 20-66 lateral leg #2 was completed in the Desert Creek 1-A porosity bench on September 23, 1998 at a measured depth of 7091', true vertical depth 5567' with a horizontal displacement of 2500' bearing 312 degrees. The entire length of the lateral was a homogenous grainstone facies with a reduced to good oomoldic to oolitic with an intercrystalline fabric porosity development in part. Oil staining was moderately fair to good and towards the end of the lateral gas had reached an average of 9300 units. The thickness of the Desert Creek 1-A porosity bench ranged between ten and two feet thick. The thickest portion was right out of the 20-66 well bore and slowly decreased towards the 18-44 well bore. As noted above the bit stayed in the bench for the length of the lateral and will contribute significantly to the overall performance of the Ratherford Unit 20-66 producer once returned to the water-flood plan.

*The black residual staining has been called by Dr. Dave Eby & others as "bitchimum" and is also known as "dead oil" ("dd o stn" on mud logs). This staining is associated with the movement of oil over long periods of time and is a good indicator of producible hydrocarbons when associated with productive porosities, but can also be found in porosities that have been filled by anhydrites and other material at later dates.

MOBIL, Ratherform Unit #20-66, Northwest Laterals



STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
ENTITY ACTION FORM - FORM 6

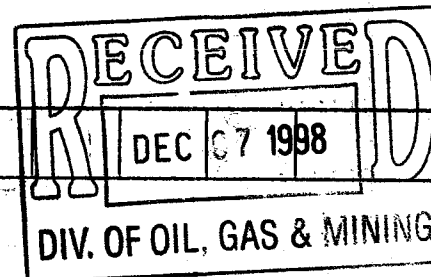
OPERATOR MOBIL PRODUCING TX & NM INC.

OPERATOR ACCT. NO. N 7370

ADDRESS P. O. BOX 633

MIDLAND, TEXAS 79702

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
E	6280 →		43-037-31592	RATHERFORD 20-66	SW/NW	20	41S	24E	SAN JUAN	9-01-98	10-13-98
WELL 1 COMMENTS: 990226 entity already added. KDR											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS: Horizontal Re-completion											



ACTION CODES (See instructions on back of form)

- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

Shirley Houchins
Signature SHIRLEY HOUCHINS
ENV & REG TECHNICIAN 12-04-98
Title _____ Date _____
Phone No. (915) 688-2585

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*

(See other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> Other _____		5. LEASE DESIGNATION AND SERIAL NO. 14-20-603-353	
1b. TYPE OF COMPLETION: NEW WELL <input type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. RESVL <input type="checkbox"/> Other <input checked="" type="checkbox"/> SIDETRACK		6. IF INDIAN, ALLOTTEE OR TRIBE NAME NAVAJO TRIBAL	
2. NAME OF OPERATOR MOBIL PRODUCING TX & NM INC.* *MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTH		7. UNIT AGREEMENT NAME RATHERFORD UNIT	
3. ADDRESS AND TELEPHONE NO. P.O. Box 633, Midland TX 79702 (915) 688-2585		8. FARM OR LEASE NAME, WELL NO. RATHERFORD 20-66	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface (SW/NW) 1221' FWL & 1369' FNL BHL: LAT #1 1192' NORTH & 1968' WEST F/SURFACE At top prod. interval reported below SPOT. LAT #2 1987' NORTH & 1519' WEST F/SURFACE SPOT At total depth		9. API WELL NO. 43-037-31592	
14. PERMIT NO. _____ DATE ISSUED _____		10. FIELD AND POOL, OR WILDCAT GREATER ANETH	
15. DATE SPUDDED 9-01-98		11. SEC., T., R. M., OR BLK. AND SURVEY OR AREA SEC. 20, T41S, R24E	
16. DATE T.D. REACHED 9-30-98		12. COUNTY OR PARISH SAN JUAN	
17. DATE COMPL. (Ready to prod.) 10-12-98		13. STATE UT	
18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 4785' GR		19. ELEV. CASINGHEAD	
20. TOTAL DEPTH, MD & TVD #24		21. PLUG, BACK T.D., MD & TVD #24	
22. IF MULTIPLE COMPL., HOW MANY*		23. INTERVALS DRILLED BY X	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)* LAT #1 (5485-5600' TVD)(5485-7887' TMD); LAT #2 (5444-5564' TVD)(5444-8091' TMD)		25. WAS DIRECTIONAL SURVEY MADE YES	
26. TYPE ELECTRIC AND OTHER LOGS RUN NO		27. WAS WELL CORED NO	
28. CASING RECORD (Report all strings set in well)			
CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE
13 3/8"	61# K-55	131'	17 1/2"
9 5/8"	36# J-55	1670'	12 1/4"
7"	20. 23. 26#	5772'	8 3/4"
ORIGINAL	CASING	UNDISTURBED	
29. LINER RECORD			
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*
30. TUBING RECORD			
SIZE	DEPTH SET (MD)	PACKER SET (MD)	
2 7/8"	5004'		
31. PERFORATION RECORD (Interval, size and number)			
32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.			
DEPTH INTERVAL (MD)		AMOUNT AND KIND OF MATERIAL USED	
5654-7887'		LATERAL #1 ACIDIZE W/30912 GALS	
		15% HCL ACID	
5335-8104'		LATERAL #1 ACIDIZE W/14260 GALS	
		15% HCL ACID	
33. PRODUCTION			
DATE FIRST PRODUCTION 10-13-98		PRODUCTION METHOD (Flowing, gas lift, pumping - size and type of pump) 2" X 4" SUBPUMP	
DATE OF TEST 11-03-98		WELL STATUS (Producing or shut-in) PUMPING	
HOURS TESTED 24	CHOKE SIZE	PROD'N. FOR TEST PERIOD 781	GAS - MCF. 470
WATER - BBL. 372	GAS - OIL RATIO 602		
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL - BBL. 781
GAS - MCF. 470		WATER - BBL. 372	
OIL GRAVITY - API (CORR.)			
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)			

35. LIST OF ATTACHMENTS
DIRECTIONAL SURVEY

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

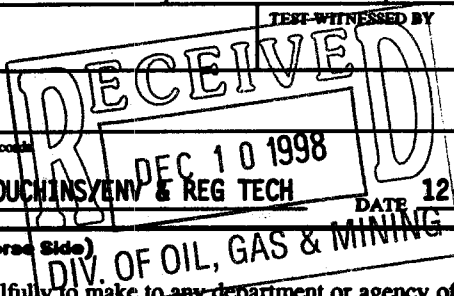
SIGNED *Shirley Houchins*

TITLE **SHIRLEY HOUCHINS ENV & REG TECH**

DATE **12-04-98**

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT -" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

MOBIL PRODUCING TX & NM INC.*
*MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM

3. Address and Telephone No.

P.O. Box 633, Midland TX 79702 (915) 688-2585

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SEC. 20, T41S, R24E
(SW/NW) 1221' FWL & 1369' FNL

FORM APPROVED

Budget Bureau No. 1004-0135

Expires: March 31, 1993

5. Lease Designation and Serial No.

14-20-603-353

6. If Indian, Allottee or Tribe Name

NAVAJO TRIBAL

7. If Unit or CA, Agreement Designation

RATHERFORD UNIT

8. Well Name and No.

RATHERFORD 20-66

9. API Well No.

43-037-31592

10. Field and Pool, or exploratory Area

GREATER ANETH

11. County or Parish, State

SAN JUAN UT

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent
☒ Subsequent Report
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment
☐ Recompletion
☐ Plugging Back
☐ Casing Repair
☐ Altering Casing
☒ Other SIDETRACK
- ☐ Change of Plans
☐ New Construction
☐ Non-Routine Fracturing
☐ Water Shut-Off
☐ Conversion to Injection
☐ Dispose Water

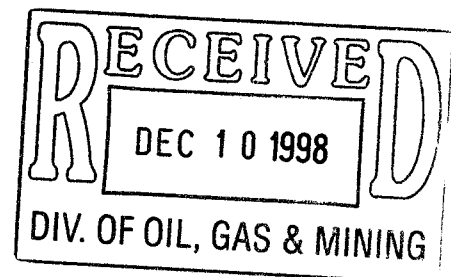
(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

BHL:

LATERAL #1: 1192° NORTH & 1968° WEST /FROM SURFACE SPOT (ZONE 1B).
LATERAL #2: 1987° NORTH & 1519° WEST /FROM SURFACE SPOT (ZONE 1A).

SEE ATTACHED PROCEDURE.



14. I hereby certify that the foregoing is true and correct

Signed Shirley Houchins Title SHIRLEY HOUCHINS/ENV & REG TECH Date 12-04-98

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

* See instruction on Reverse Side

WTC
3-1-99
RSH

DRILLED FOOTAGE CALCULATION FOR DIRECTIONAL AND HORIZONTAL WELLS

Unit, Well Name: Ratherford Unit, Well 20-66
API Well #: 43-037-31592
Well Completion: Horizontal, Producer, 2 Laterals

First leg description:	Lateral #1
KOP MD:	5476.00
EOL MD:	7887.00
Footage drilled:	2411.00
Max. TVD Recorded	5600.61

Second leg description:	Lateral #2
KOP MD:	5435.00
EOL MD:	8091.00
Footage drilled:	2656.00
Max. TVD Recorded	5573.41

<i>Total Footage Drilled (MD):</i>	<i>5067.00</i>
<i>Deepest point (TVD):</i>	<i>5600.61</i>

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #20-66
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH

9-1-98 Y MIRU NAVAJO WEST DD UNIT #15. SDFN

9-2-98 SITP=150# SICP=200#. BLED TBG. & CSG. TO 0#. ND PROD EQUIP. & NU BOP. POH W/ TBG. & SUB PUMP. RIH W/GUIBERSON RTBP ON 2.875" TBG. SET GUIBERSON 7" RTBP @ 5400'. CIRC. HOLE FTWR. SDFN.

9-3-98 FIN. DISPLACING HOLE W/ FWTR. PRESS. TEST RTBP & CSG. TO 1000# 30 MIN. OK. POH W/ TBG. RET. TOOL LAYING DOWN. ND BOP'S & NU TBG. RIGGED DOWN, RELEASED NAVAJO WEST DD UNIT #15.

9-11-98 NOTIFIED JIM THOMPSON W/ STATE UTAH @ 7:25 PM, ABOUT STARTING DRILLING OPERATION. MI MONTEZUMA 25, RIGGED UP.

9-12-98 NU BOP, CHOKE, MUD GAS SEPARATOR, PRESS TESTED BOP, CHOKE, 2000# HIGH, 250# LOW, HELD OK. RIH W/ RET TOOL, AOHDP, LATCH & REL RBP @ 5400', POH W/ 7" RBP. RU SCHLUMBERGER & RIH & SET 7" TIW BIG BORE PKR.

9-13-98 RIH W/ TIW ANCHOR LATCH ASSEMBLY, 2.875" AOHDP, LATCH INTO TIW PKR @ 5494'. RU GYRO DATA, RIH W/ GYRO, PKR KEYWAY @ 316 GTF, RUN GYRO SURVEY TO SURFACE. ATTEMPTED TO LOAD HOLE W/ NO SUCCESS. CIRC HOLE CLEAN. POH W/ ANCHOR LATCH ASSEMBLY. FINAL REPORT FOR REENTRY.

9-13-98 RIH W/ TIW ANCHOR LATCH ASSEMBLY, WHIPSTOCK, STARTER MILL. 2.875" AOHDP, LATCH INTO TIW PKR @ 5494' @ 316 GTF, SHEARED BOLT W/ TOP OF WHIPSTOCK @ 5476' W/ FACE OF WHIPSTOCK 296 DEG. CUT WINDOW FROM 5476'-5478'. POH W/ STARTER MILL. RIH W/ WINDOW & WATERMELON MILLS ON SAME BHA. CUT WINDOW FROM 5476'-5481'.

9-14-98 CUT WINDOW FROM 5481'-5484' & FORMATION TO 5485'. CIRC HOLE CLEAN. POH W/ MILLS.

9-14-98 RIH W/ MUD MOTOR, PH6 TBG, & 2.875" AOHDP. RIH W/ GYRO. TIME DRILLED FROM 5485'-5488'. SLIDE DRILLED W/ GYRO FROM 5488'-5513'. POH W/ GYRO. SLIDE DRILLED W/ MWD FROM 5513'-5560'. SLIDE DRILLED CURVE W/ MWD FROM 5560'-5576'. LANDED CURVE @ 5676' MD, 5600' TVD.

9-15-98 PUMPED SWEEP & CIRC. HOLE CLEAN. POH & LD AOHDP, LD MWD & MUD MOTOR, RIH W/ MUC MOTOR PH6 & 2.875" AOHDP, DIDN'T TAG BOTTOM. LOADED DP & BROKE CIRC. SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 5676'-6010'.

9-16-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 6010'-6820'. LAST SURVEY AT 6765' MD, 5588.50' TVD, 90.90 ANGLE, 305.20' AZ., 1188.77' VERT. SECTION.

9-17-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 6820'-7170'. LAST SURVEY AT 7112' MD, 5588.46' TVD.

9-18-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 7170'-7887' TD. LAST SURVEY AT 7887' MD, 5600.61' TVD. PUMP SWEEP AND CIRC.

9-19-98 FIN OUT OF HOLE WITH LATERAL ASSY. LAYING DOWN SAME. TIH W/SUPER HOOK AND ENGAGE WHIPSTOCK. WORKED TRYING TO RELEASE WHIPSTOCK W/O SHEARING PIN. WORKING PIPE AND GRADUALLY INCREASING UP WT SHEARED PIN IN SHEAR SUB AT 80K OVER STRING WT. TOH W/SUPER HOOK AND UPPER PORTION OF SHEAR SUB. TIH W/OS, JARS TO TOP OF FISH AT 5491'. ATTEMPT TO PUMP AND WASH DEBRIS OFF TOP OF FISH. PLUGGED UNABLE TO PUMP THROUGH STRING. START OUT OF HOLE. STRING CAME DRY. TRIP BACK IN HOLE. WASH AND CIRC. ON TOP OF FISH. ENGAGE AND JARRED FREE. START OUT OF HOLE. LOST

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #20-66
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PAGE 2

DERRICK LIGHTS. REPAIRS (LIGHTS). POOH LAY DOWN FISH (FULL RECOVERY).

9-19-98 PU TIW LATCH ASSY., WHIPSTOCK, SHEAR BOLT AND STARTING MILL, AND AOHDP LATCH INTO TIW PKR. AT 5494'. SHEARED BOLT W/TOP OF WS AT 5435'. PU POWER SWIVEL. CUT WINDOW FROM 5435'-5437' AND CIRC. CLEAN. TOO H W/STARTER MILL

9-20-98 CHANGE OUT MILLS. TIH W/ CSG. WATERMELON MILL. RU POWER SWIVEL. CUT WINDOW FROM 5435'-5443 PLUS 1' FORMATION TO 5444'. PUMP AND SWEEP CIRC. OUT. FINAL REPORT LAT. 2.

9-20-98 PU AND RIH AS FOLLOWS W/CURVE BUILDING ASSY. PH6 TBG. AND AOHDP. TAG BTM. FILL PIPE. RU GYRO DATA. TIH AND ORIENT TOOLFACE. TIME DRILL FROM 5444'-5474' W/ GYRO. RD GYRO DATA. SLIDE /DRILL FROM 5474'-5485' USING MWD FOR SURVEYS. (LAST SURVEY AT 5454'MD, TVD 5453.76', ANGLE 8, AZ. 335).

9-21-98 SLIDE/DRILL AND SURVEYS FROM 5485' TO TD OF 5629' (CURVE SECTION) PROJECTED AT BIT AT 5629' MD, 5560.43' TVD. CIRC. SWEEP TO SURFACE. PULL OUT OF CURVE W/SWIVEL. LAYING DOWN. DP AND LAY DOWN CURVE BUILDING ASSY. PU RIH W/ BIT. PH6 TBG., AOHDP TO BTM 5629'. SLIDE/DRILL FROM 5485'-5730'.

9-22-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 5730'-7060'. LAST SURVEY AT 7002' MD, 5571.71' TVD.

9-23-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 7060' TO TD OF 8091'. LAST SURVEY AT T.D. OF 8091' MD, 5567.07' TVD. DISPLACE HOLE W/10# BRINE. POOH. LAYING DOWN LATERAL BUILDING TOOLS. PU TIH. PH6 TBG. AS TAILPIPE, 7" GUIBERSON V1 PKR. W/BLANKING PLUG IN PLACE AND TBG. AND DP TO 5335' AND SET PKR. (WINDOW AT 5435') TAILPIPE AT 5641' (CURVE LANDED AT 5629') TEST PKR. AND PLUG TO 600# OK.

9-24-98 LAY DOWN ALL DRILLSTRING. JET AND CLEAN STEEL PIT. ND. BOP STACK, CHOKE MANIFOLD, GAS SEPARATOR ETC. START RIGGING DOWN. RELEASE RIG AT 2400 HRS. FINAL REPORT PENDING COMPLETION.

9-30-98 MIRU NAVAJO WEST 15, RD/TBG HEAD, NU FLANGED HEAD, NU BOP, HOT WORK PERMIT FILLED OUT AND SENT TO SCOTT MCLAURIN. TIH W/O-OFF TOOL AND 2-7/8" PH6 WRK STRG, SI SDFN.

COMPLETION:

10-1-98 FIN RIH T/5335 PH6 WRK STRG. LATCH ONTO ON/OFF TOOL. TEST CSG T/500PSI, TEST GOOD. MIRU TEFTLLER WL, TBG. PRES. WAS 260PSI. W/ BRINE FROM 5335' TO SURFACE. MIRU D/S ACIDIZERS, RIH W/ COILED TBG. WASHING TO 8104' LATERAL 2A1 ACIDIZING AT APPRX. 3.5BPM, COILED TBG PRESENTLY AT 6782', ACID PUMPED SO FAR = 460 BBLs (14260 GALS).

10-2-98 FIN ACIDIZING W/ DOWELL CT UNIT. RDMO DOWELL. SI WELL AT 07:30HRS. TBG PRESSURE WAS 300PSI. KILLED TBG. TOO H PH6 WORK STRG., ON/OFF TOOL & PKR, PU SUPERHOOK, TIH HOOK WHIPSTOCK, TOO H W/WRK STRG & WHIPSTOCK, SET ORIENT TOOL, TIH W/WHIPSTOCK WRK STRG., SET WHIPSTK POOH W/3STDs WRK STRNG, SI SDFN.

10-3-98 SI TBG PRESSURE=250 PSI, KILL WELL. FIN POOH PH6 WRK STRNG WEATHERFORD RET. TOOL. RIH W/ TAIL PIPE, PH6 WRK STRNG. TST PKR TO 500 PSI, TEST GOOD, SI SDFWKND.

10-4-98 SHUT-IN SUNDAY.

ATTACHMENT – FORM 3160-5
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10-5-98 MIRU DOWELL EQUIP SITP 295#. DOWELL ACIDIZED LATERAL 1A1 FROM 5654-7887' W/ 30912 GALS 15% HCL ACID. SWISDFN.

10-6-98 SITP 300 BLED OFF GAS, KILLED WELL, SWAB BACK IN & FLOWED TOTAL 210, 15 BBLs SO 65% OIL STP 200# FTP 75#.

10-7-98 SI 12 HRS TP 300#, BLED OFF AND WELL DIED. REL PKR POH LAID DOWN. RIH W/ WEA RET TOOL LATCH ON AND REL REENTRY GUIDE, POH LAID DOWN SAME. RIH W/ KILL STRING TO 2500', SWIFN.

10-8-98 SI 12 HRS TP 200#, BLED OFF WELL, POH W/ KILL STRING. RIH W/ WTR MELON STRING MILL ON PH6 TBG STOP IN WINDOW @ 5435' UNABLE TO WORK MILL THRU WINDOW SET 5,000 DOWN, PULL 10,000 COMING FREE. WAIT ON SWIVEL. RIG UP SWIVEL, WORK MILL FM 5435'-5440', MILL FM 5440'-5441', NO TORQ, MILL APPEARS TO BE SPINNING. TOH AND STRAP TBG. RIH W/ SAME CUTRITE MILL ON 2.875" PH6 TBG. 5380' SWIFN.

10-9-98 SI 12 HRS TP 100#, BLED OFF GAS. MILL FM 5441'-5441.6', DECISION MADE TO RUN SUB PUMP RIG DOWN SWIVEL. POH LAID DOWN 2.875" PH6 TBG AND MILL, SWIFN.

10-10-98 SI 12 HRS TP 250#, BLED OFF GAS, ND BOP, NU ESP SPOOL. RIH W/ 4"X 97' 288 STAGE ESP SUB PUMP, END OF PUMP @ 5397' TOP PUMP @ 5300'. 2.875" TBG @ 5004.12'.

10-11-98 SHUT DOWN FOR SUNDAY.

10-12-98 RIG DOWN AND REL MONTEZUMA WS AND TO PROD FINAL REPORT.

LATERAL #1A1 (5485-5600' TVD)(5485-7887' TMD)
LATERAL #2A1(5444-5567' TVD)(5444-8091' TMD)

Mobil

**San Juan County
Utah
Ratherford Unit
RU 20-66 - MWD Survey Leg #1**

SURVEY REPORT

9 October, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF AMERSON INDUSTRIES, INC.

Survey Ref: svy3167

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
100.00	0.550	191.350	100.00	0.47 S	0.09 W	-0.16	0.550
300.00	0.570	193.660	299.99	2.38 S	0.52 W	-0.78	0.015
500.00	0.580	174.120	499.98	4.35 S	0.65 W	-1.68	0.098
700.00	0.530	178.700	699.97	6.28 S	0.52 W	-2.77	0.033
900.00	0.510	163.990	899.96	8.06 S	0.26 W	-3.92	0.067
1100.00	0.370	171.150	1099.96	9.56 S	0.09 E	-4.98	0.075
1300.00	0.160	200.850	1299.95	10.46 S	0.09 E	-5.44	0.122
1500.00	0.200	244.250	1499.95	10.87 S	0.33 W	-5.30	0.069
1700.00	0.280	286.890	1699.95	10.88 S	1.11 W	-4.63	0.095
1900.00	0.220	273.850	1899.95	10.71 S	1.96 W	-3.81	0.041
2100.00	0.120	237.270	2099.95	10.80 S	2.52 W	-3.38	0.071
2300.00	0.660	222.190	2299.94	11.77 S	3.47 W	-3.06	0.273
2500.00	0.860	222.340	2499.93	13.73 S	5.25 W	-2.53	0.100
2700.00	0.500	222.020	2699.91	15.49 S	6.85 W	-2.07	0.180
2900.00	0.160	88.020	2899.91	16.12 S	7.15 W	-2.13	0.311
3100.00	0.160	70.720	3099.91	16.02 S	6.61 W	-2.55	0.024
3300.00	0.270	44.660	3299.91	15.60 S	6.02 W	-2.84	0.072
3500.00	0.310	19.510	3499.90	14.75 S	5.50 W	-2.84	0.066
3700.00	0.290	44.890	3699.90	13.88 S	4.97 W	-2.86	0.067
3900.00	0.220	83.160	3899.90	13.48 S	4.23 W	-3.29	0.090
4100.00	0.310	123.600	4099.90	13.73 S	3.40 W	-4.13	0.101
4300.00	0.190	137.810	4299.90	14.28 S	2.72 W	-4.99	0.067
4500.00	0.830	178.710	4499.89	15.97 S	2.47 W	-6.08	0.349
4700.00	0.760	181.900	4699.87	18.74 S	2.48 W	-7.49	0.041
4900.00	0.700	190.700	4899.85	21.27 S	2.75 W	-8.55	0.063
5100.00	0.710	205.150	5099.84	23.59 S	3.50 W	-9.10	0.089
5300.00	0.420	164.710	5299.83	25.42 S	3.84 W	-9.75	0.238

MWD Survey Leg #1

5476.00	0.410	147.240	5475.82	26.57 S	3.33 W	-10.78	0.072
5485.00	3.800	293.000	5484.82	26.48 S	3.58 W	-10.51	46.060
5495.00	7.600	303.300	5494.77	25.99 S	4.44 W	-9.52	39.202
5505.00	12.300	306.350	5504.61	25.00 S	5.85 W	-7.80	47.278
5515.00	17.200	307.820	5514.28	23.46 S	7.88 W	-5.27	49.139
5525.00	22.000	308.700	5523.70	21.38 S	10.51 W	-1.95	48.089
5535.00	26.900	311.700	5532.80	18.70 S	13.66 W	2.13	50.534
5545.00	31.400	314.300	5541.53	15.37 S	17.22 W	6.89	46.739
5555.00	36.600	316.300	5549.82	11.40 S	21.15 W	12.30	53.183
5565.00	41.800	316.900	5557.56	6.80 S	25.49 W	18.38	52.138

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5575.00	47.900	316.800	5564.65	1.66 S	30.31 W	25.16	61.004
5585.00	53.800	315.400	5570.96	3.92 N	35.68 W	32.64	59.988
5595.00	58.400	312.500	5576.54	9.67 N	41.66 W	40.72	51.910
5605.00	61.900	308.400	5581.52	15.29 N	48.26 W	49.27	49.886
5615.00	64.900	304.600	5586.00	20.61 N	55.45 W	58.17	45.321
5625.00	66.900	307.300	5590.08	25.97 N	62.84 W	67.26	31.739
5635.00	70.600	312.400	5593.70	31.94 N	69.98 W	76.46	60.225
5645.00	75.000	316.000	5596.66	38.60 N	76.83 W	85.75	55.838
5676.00	89.400	312.000	5600.86	59.86 N	98.87 W	115.58	48.169
5719.00	89.200	307.300	5601.39	87.29 N	131.97 W	158.06	10.939
5751.00	89.700	303.900	5601.69	105.91 N	157.96 W	189.94	10.739
5783.00	90.100	299.900	5601.75	122.82 N	185.14 W	221.93	12.562
5815.00	90.900	296.400	5601.47	137.91 N	213.35 W	253.89	11.219
5846.00	90.400	293.600	5601.12	151.01 N	241.44 W	284.72	9.175
5878.00	89.700	291.800	5601.09	163.36 N	270.96 W	316.40	6.035
5910.00	90.600	289.300	5601.01	174.59 N	300.92 W	347.87	8.303
5942.00	90.400	289.700	5600.73	185.27 N	331.09 W	379.25	1.397
5974.00	90.500	289.000	5600.48	195.88 N	361.28 W	410.60	2.210
6005.00	90.100	288.500	5600.31	205.84 N	390.63 W	440.91	2.066
6037.00	89.700	287.800	5600.37	215.81 N	421.04 W	472.12	2.519
6068.00	89.300	287.400	5600.64	225.18 N	450.59 W	502.29	1.825
6100.00	89.100	287.600	5601.09	234.80 N	481.10 W	533.42	0.884
6132.00	88.700	287.200	5601.70	244.37 N	511.63 W	564.54	1.768
6164.00	88.800	287.400	5602.40	253.89 N	542.18 W	595.64	0.699
6195.00	90.600	286.900	5602.56	263.03 N	571.80 W	625.75	6.026
6227.00	90.500	287.100	5602.25	272.38 N	602.40 W	656.82	0.699
6259.00	90.900	287.100	5601.86	281.79 N	632.98 W	687.89	1.250
6291.00	91.900	286.500	5601.08	291.04 N	663.61 W	718.92	3.644
6322.00	92.400	286.900	5599.92	299.94 N	693.28 W	748.96	2.065
6354.00	91.200	288.500	5598.91	309.66 N	723.75 W	780.10	6.248
6385.00	90.600	290.000	5598.43	319.88 N	753.01 W	810.46	5.211
6417.00	90.400	291.600	5598.15	331.24 N	782.92 W	841.97	5.039
6448.00	90.500	293.400	5597.90	343.11 N	811.56 W	872.63	5.815
6479.00	91.200	294.800	5597.44	355.76 N	839.85 W	903.41	5.049
6511.00	91.100	296.200	5596.80	369.54 N	868.73 W	935.26	4.385
6543.00	91.800	296.200	5595.99	383.66 N	897.43 W	967.15	2.187
6575.00	92.500	296.900	5594.79	397.95 N	926.04 W	999.03	3.092
6606.00	93.000	298.700	5593.30	412.39 N	953.43 W	1029.95	6.020
6638.00	91.900	299.900	5591.94	428.04 N	981.31 W	1061.91	5.085
6670.00	91.500	301.100	5590.99	444.27 N	1008.86 W	1093.90	3.951
6701.00	91.600	302.200	5590.15	460.53 N	1035.24 W	1124.88	3.562
6733.00	91.700	303.800	5589.23	477.95 N	1062.07 W	1156.84	5.008
6765.00	90.900	305.200	5588.50	496.07 N	1088.43 W	1188.77	5.038
6796.00	89.100	304.800	5588.50	513.85 N	1113.83 W	1219.69	5.948
6828.00	89.200	306.600	5588.97	532.52 N	1139.81 W	1251.57	5.633

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6859.00	88.900	308.100	5589.49	551.33 N	1164.45 W	1282.37	4.934
6890.00	88.800	307.800	5590.11	570.39 N	1188.89 W	1313.12	1.020
6922.00	89.300	307.600	5590.64	589.95 N	1214.20 W	1344.89	1.683
6953.00	90.300	308.500	5590.75	609.06 N	1238.62 W	1375.65	4.340
6984.00	92.300	308.500	5590.05	628.35 N	1262.87 W	1406.36	6.452
7016.00	92.400	307.800	5588.73	648.10 N	1288.01 W	1438.08	2.208
7048.00	90.900	307.400	5587.81	667.62 N	1313.35 W	1469.85	4.851
7080.00	90.000	307.600	5587.56	687.10 N	1338.74 W	1501.63	2.881
7112.00	86.800	308.700	5588.45	706.85 N	1363.89 W	1533.36	10.574
7143.00	86.700	308.700	5590.21	726.21 N	1388.05 W	1564.02	0.323
7175.00	86.900	308.800	5592.00	746.20 N	1412.96 W	1595.67	0.699
7207.00	87.200	308.800	5593.65	766.23 N	1437.87 W	1627.32	0.938
7239.00	87.600	309.200	5595.10	786.35 N	1462.71 W	1658.96	1.767
7270.00	89.300	309.200	5595.94	805.93 N	1486.73 W	1689.62	5.484
7301.00	89.400	309.900	5596.29	825.67 N	1510.63 W	1720.27	2.281
7333.00	89.200	310.100	5596.68	846.24 N	1535.14 W	1751.86	0.884
7364.00	89.700	311.100	5596.98	866.41 N	1558.67 W	1782.41	3.606
7396.00	89.200	312.000	5597.28	887.63 N	1582.62 W	1813.85	3.217
7427.00	89.200	312.400	5597.72	908.45 N	1605.58 W	1844.25	1.290
7459.00	89.400	311.000	5598.11	929.74 N	1629.47 W	1875.67	4.419
7491.00	90.000	309.400	5598.27	950.39 N	1653.91 W	1907.25	5.340
7523.00	89.600	307.800	5598.39	970.36 N	1678.92 W	1938.96	5.154
7554.00	89.900	308.100	5598.52	989.42 N	1703.37 W	1969.72	1.369
7585.00	90.600	308.800	5598.39	1008.70 N	1727.64 W	2000.45	3.193
7617.00	90.900	308.800	5597.97	1028.75 N	1752.58 W	2032.14	0.938
7649.00	89.900	307.800	5597.74	1048.58 N	1777.69 W	2063.87	4.419
7680.00	88.600	307.300	5598.15	1067.47 N	1802.27 W	2094.66	4.493
7712.00	89.300	307.600	5598.74	1086.92 N	1827.67 W	2126.44	2.380
7744.00	90.100	307.300	5598.90	1106.38 N	1853.07 W	2158.23	2.670
7776.00	90.500	306.700	5598.74	1125.64 N	1878.63 W	2190.04	2.253
7808.00	90.600	306.600	5598.43	1144.74 N	1904.30 W	2221.88	0.442
7839.00	88.200	306.900	5598.75	1163.29 N	1929.13 W	2252.71	7.802
7855.00	87.700	306.700	5599.33	1172.86 N	1941.94 W	2268.62	3.365
7887.00	87.700	306.700	5600.61	1191.97 N	1967.57 W	2300.43	0.000

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 300.870° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7887.00ft.,
The Bottom Hole Displacement is 2300.47ft., in the Direction of 301.208° (True).

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
5300.00	5299.83	25.42 S	3.84 W	Tie-on to Gyro Data Survey.
5476.00	5475.82	26.57 S	3.33 W	Interpolate Gyro Survey at Top of Whipstock.
5485.00	5484.82	26.48 S	3.58 W	Start SSDS-MWD Surveys (Interpolate Azimuth)
5525.00	5523.70	21.38 S	10.51 W	Slight Magnetic Interference on MWD Surveys.
5585.00	5570.96	3.92 N	35.68 W	Final Magnetic Interference on MWD Surveys.
5595.00	5576.54	9.67 N	41.66 W	Full MWD Surveys.
7855.00	5599.33	1172.86 N	1941.94 W	Final SSDS-MWD Survey Station.
7887.00	5600.61	1191.97 N	1967.57 W	Projection to Bit at TD Leg #1.

Mobil

**San Juan County
Utah
Ratherford Unit
RU 20-66 - MWD Survey Leg #2**

SURVEY REPORT

9 October, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF DRISCOLL INDUSTRIES, INC.

Survey Ref: svy3188

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
100.00	0.550	191.350	100.00	0.47 S	0.09 W	-0.33	0.550
300.00	0.570	193.660	299.99	2.38 S	0.52 W	-1.63	0.015
500.00	0.580	174.120	499.98	4.35 S	0.65 W	-3.15	0.098
700.00	0.530	178.700	699.97	6.28 S	0.52 W	-4.79	0.033
900.00	0.510	163.990	899.96	8.06 S	0.26 W	-6.39	0.067
1100.00	0.370	171.150	1099.96	9.56 S	0.09 E	-7.81	0.075
1300.00	0.160	200.850	1299.95	10.46 S	0.09 E	-8.54	0.122
1500.00	0.200	244.250	1499.95	10.87 S	0.33 W	-8.63	0.069
1700.00	0.280	286.890	1699.95	10.88 S	1.11 W	-8.18	0.095
1900.00	0.220	273.850	1899.95	10.71 S	1.96 W	-7.55	0.041
2100.00	0.120	237.270	2099.95	10.80 S	2.52 W	-7.29	0.071
2300.00	0.660	222.190	2299.94	11.77 S	3.47 W	-7.52	0.273
2500.00	0.860	222.340	2499.93	13.73 S	5.25 W	-8.07	0.100
2700.00	0.500	222.020	2699.91	15.49 S	6.85 W	-8.56	0.180
2900.00	0.160	88.020	2899.91	16.12 S	7.15 W	-8.90	0.311
3100.00	0.160	70.720	3099.91	16.02 S	6.61 W	-9.14	0.024
3300.00	0.270	44.660	3299.91	15.60 S	6.02 W	-9.14	0.072
3500.00	0.310	19.510	3499.90	14.75 S	5.50 W	-8.75	0.066
3700.00	0.290	44.890	3699.90	13.88 S	4.97 W	-8.36	0.067
3900.00	0.220	83.160	3899.90	13.48 S	4.23 W	-8.47	0.090
4100.00	0.310	123.600	4099.90	13.73 S	3.40 W	-9.16	0.101
4300.00	0.190	137.810	4299.90	14.28 S	2.72 W	-9.99	0.067
4500.00	0.830	178.710	4499.89	15.97 S	2.47 W	-11.52	0.349
4700.00	0.760	181.900	4699.87	18.74 S	2.48 W	-13.76	0.041
4900.00	0.700	190.700	4899.85	21.27 S	2.75 W	-15.65	0.063
5100.00	0.710	205.150	5099.84	23.59 S	3.50 W	-17.10	0.089
5300.00	0.420	164.710	5299.83	25.42 S	3.84 W	-18.39	0.238

MWD Survey Leg #2

5435.00	0.410	151.300	5434.82	26.32 S	3.47 W	-19.33	0.072
5444.00	4.100	335.000	5443.82	26.06 S	3.59 W	-19.05	50.102
5454.00	8.000	345.810	5453.76	25.06 S	3.92 W	-18.05	40.460
5464.00	12.900	349.150	5463.59	23.29 S	4.30 W	-16.39	49.353
5474.00	17.800	350.770	5473.23	20.68 S	4.75 W	-14.00	49.183
5484.00	22.800	351.740	5482.61	17.25 S	5.28 W	-10.92	50.111
5494.00	27.400	352.400	5491.66	13.05 S	5.86 W	-7.17	46.084
5504.00	32.000	353.800	5500.34	8.13 S	6.45 W	-2.83	46.517
5514.00	36.300	355.900	5508.62	2.55 S	6.95 W	2.00	44.581
5524.00	40.600	356.000	5516.45	3.66 N	7.39 W	7.28	43.004

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5534.00	45.700	354.800	5523.74	10.47 N	7.94 W	13.14	51.654
5544.00	50.600	357.200	5530.41	17.90 N	8.45 W	19.46	52.153
5554.00	53.500	353.300	5536.56	25.75 N	9.11 W	26.22	42.262
5564.00	57.300	352.900	5542.24	33.92 N	10.10 W	33.43	38.142
5574.00	62.000	352.100	5547.29	42.48 N	11.23 W	41.03	47.504
5584.00	67.100	352.000	5551.59	51.42 N	12.48 W	49.01	51.008
5594.00	72.500	351.800	5555.04	60.70 N	13.80 W	57.32	54.033
5604.00	77.500	351.700	5557.63	70.26 N	15.18 W	65.89	50.009
5629.00	89.600	349.800	5560.43	94.73 N	19.17 W	88.08	48.983
5671.00	93.400	346.500	5559.33	135.81 N	27.79 W	126.45	11.980
5702.00	91.100	343.800	5558.11	165.75 N	35.73 W	155.38	11.436
5734.00	88.900	340.100	5558.11	196.16 N	45.64 W	185.85	13.451
5765.00	89.300	337.500	5558.60	225.06 N	56.85 W	215.85	8.485
5797.00	90.200	336.100	5558.74	254.47 N	69.46 W	247.09	5.201
5828.00	90.300	334.000	5558.60	282.58 N	82.53 W	277.53	6.782
5860.00	89.700	334.500	5558.60	311.40 N	96.43 W	309.05	2.441
5891.00	89.300	335.200	5558.87	339.46 N	109.61 W	339.51	2.601
5923.00	89.000	335.000	5559.35	368.48 N	123.08 W	370.94	1.127
5955.00	88.400	335.000	5560.08	397.47 N	136.60 W	402.37	1.875
5986.00	88.600	334.300	5560.89	425.48 N	149.87 W	432.85	2.348
6018.00	90.000	334.000	5561.28	454.27 N	163.82 W	464.37	4.474
6050.00	92.300	334.700	5560.64	483.11 N	177.67 W	495.86	7.513
6082.00	92.300	333.300	5559.35	511.85 N	191.68 W	527.37	4.371
6114.00	92.700	332.400	5557.96	540.30 N	206.27 W	558.98	3.075
6145.00	92.400	332.200	5556.58	567.72 N	220.67 W	589.64	1.163
6177.00	92.100	332.100	5555.32	595.99 N	235.61 W	621.31	0.988
6209.00	89.800	331.500	5554.79	624.18 N	250.72 W	653.03	7.428
6241.00	88.200	331.200	5555.35	652.26 N	266.06 W	684.78	5.087
6273.00	90.100	331.900	5555.82	680.39 N	281.31 W	716.51	6.328
6304.00	90.300	332.200	5555.71	707.78 N	295.84 W	747.22	1.163
6336.00	90.400	332.800	5555.52	736.16 N	310.61 W	778.89	1.901
6368.00	88.200	332.800	5555.91	764.62 N	325.24 W	810.53	6.875
6400.00	87.200	331.900	5557.19	792.94 N	340.07 W	842.18	4.203
6432.00	88.200	332.200	5558.48	821.18 N	355.06 W	873.86	3.262
6463.00	88.100	331.300	5559.48	848.48 N	369.73 W	904.58	2.920
6495.00	88.200	330.500	5560.51	876.42 N	385.28 W	936.35	2.518
6527.00	89.100	330.300	5561.27	904.24 N	401.08 W	968.15	2.881
6559.00	88.900	328.500	5561.82	931.78 N	417.37 W	1000.02	5.659
6590.00	89.000	328.700	5562.39	958.23 N	433.52 W	1030.92	0.721
6622.00	88.600	328.400	5563.06	985.53 N	450.21 W	1062.82	1.562
6653.00	88.100	326.400	5563.96	1011.63 N	466.90 W	1093.76	6.648
6685.00	87.100	324.000	5565.30	1037.88 N	485.15 W	1125.73	8.119
6717.00	87.900	322.600	5566.69	1063.51 N	504.25 W	1157.69	5.035
6749.00	87.500	321.000	5567.98	1088.64 N	524.03 W	1189.64	5.150
6781.00	87.000	319.600	5569.51	1113.23 N	544.44 W	1221.52	4.641

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6813.00	88.400	318.300	5570.80	1137.34 N	565.44 W	1253.36	5.968
6844.00	89.100	315.700	5571.47	1160.01 N	586.57 W	1284.10	8.684
6876.00	89.800	313.800	5571.78	1182.53 N	609.30 W	1315.66	6.327
6907.00	90.100	311.000	5571.81	1203.43 N	632.19 W	1346.00	9.084
6938.00	90.500	310.800	5571.64	1223.73 N	655.62 W	1376.16	1.443
6970.00	90.000	310.400	5571.50	1244.56 N	679.91 W	1407.26	2.001
7002.00	89.200	309.900	5571.73	1265.19 N	704.37 W	1438.29	2.948
7033.00	88.900	309.700	5572.24	1285.03 N	728.19 W	1468.31	1.163
7065.00	89.000	309.400	5572.83	1305.40 N	752.86 W	1499.26	0.988
7097.00	89.200	309.600	5573.33	1325.75 N	777.55 W	1530.20	0.884
7128.00	90.500	310.400	5573.41	1345.68 N	801.29 W	1560.25	4.924
7160.00	91.200	311.000	5572.94	1366.54 N	825.55 W	1591.36	2.881
7192.00	91.300	310.800	5572.24	1387.49 N	849.73 W	1622.49	0.699
7223.00	91.100	311.000	5571.59	1407.78 N	873.16 W	1652.64	0.912
7255.00	90.800	310.800	5571.06	1428.73 N	897.34 W	1683.77	1.127
7287.00	90.600	311.300	5570.67	1449.74 N	921.47 W	1714.93	1.683
7318.00	89.600	311.100	5570.61	1470.16 N	944.80 W	1745.13	3.290
7350.00	89.800	311.300	5570.78	1491.24 N	968.87 W	1776.30	0.884
7381.00	89.900	311.500	5570.86	1511.74 N	992.13 W	1806.53	0.721
7413.00	90.100	311.100	5570.86	1532.86 N	1016.17 W	1837.71	1.398
7444.00	89.700	311.100	5570.92	1553.24 N	1039.53 W	1867.90	1.290
7475.00	89.700	310.600	5571.08	1573.52 N	1062.98 W	1898.06	1.613
7507.00	89.600	310.400	5571.27	1594.30 N	1087.31 W	1929.14	0.699
7539.00	90.400	311.000	5571.27	1615.17 N	1111.57 W	1960.25	3.125
7571.00	91.200	312.200	5570.83	1636.41 N	1135.50 W	1991.47	4.507
7602.00	91.200	312.000	5570.18	1657.19 N	1158.49 W	2021.77	0.645
7633.00	91.500	312.900	5569.45	1678.10 N	1181.36 W	2052.11	3.060
7665.00	92.300	313.800	5568.39	1700.06 N	1204.62 W	2083.52	3.762
7697.00	92.300	313.900	5567.10	1722.21 N	1227.67 W	2114.97	0.312
7729.00	90.500	312.500	5566.32	1744.11 N	1250.99 W	2146.36	7.125
7760.00	89.600	312.400	5566.29	1765.03 N	1273.87 W	2176.71	2.921
7792.00	89.700	312.200	5566.49	1786.57 N	1297.53 W	2208.02	0.699
7824.00	89.800	312.200	5566.63	1808.06 N	1321.24 W	2239.31	0.313
7856.00	90.200	312.400	5566.63	1829.60 N	1344.91 W	2270.62	1.398
7888.00	89.600	311.800	5566.69	1851.05 N	1368.65 W	2301.90	2.652
7919.00	88.200	311.500	5567.28	1871.65 N	1391.81 W	2332.15	4.619
7951.00	88.800	311.700	5568.12	1892.89 N	1415.73 W	2363.36	1.976
7983.00	90.200	312.200	5568.40	1914.28 N	1439.53 W	2394.63	4.646
8015.00	91.100	312.400	5568.03	1935.81 N	1463.19 W	2425.93	2.881
8046.00	91.300	312.900	5567.38	1956.81 N	1485.99 W	2456.30	1.737
8091.00	89.500	312.000	5567.07	1987.18 N	1519.19 W	2500.34	4.472

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 20-66



Mobil
San Juan County

Utah
Ratherford Unit

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 324.240° (True).

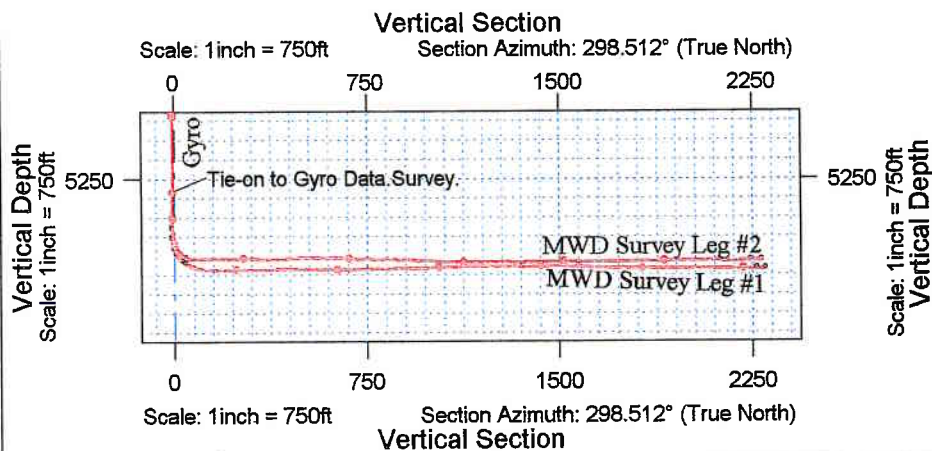
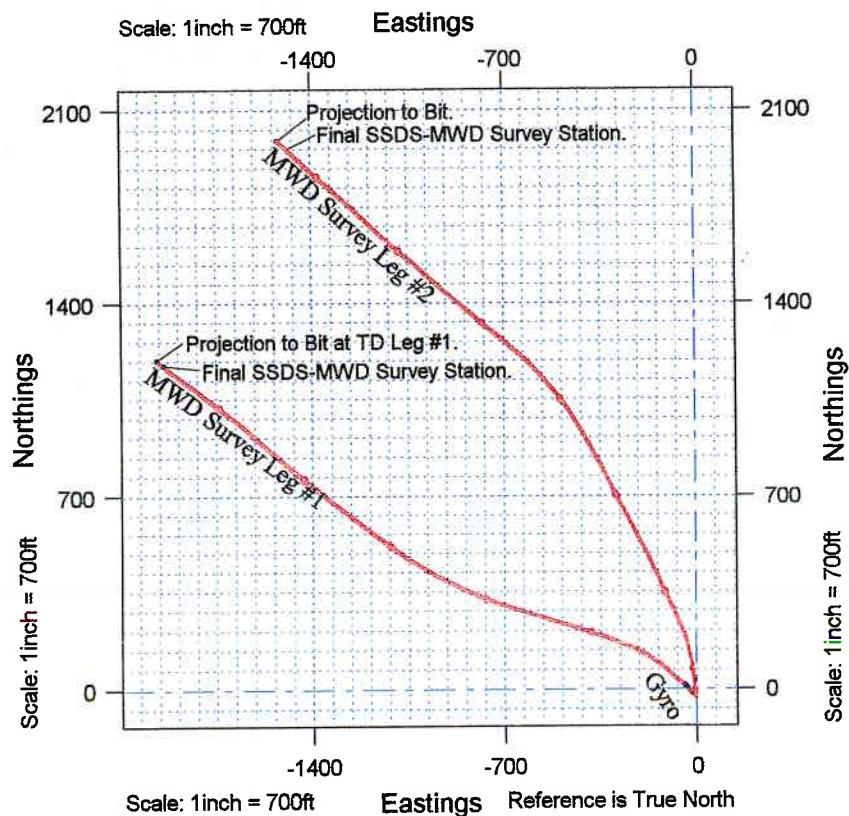
Based upon Minimum Curvature type calculations, at a Measured Depth of 8091.00ft.,
The Bottom Hole Displacement is 2501.37ft., in the Direction of 322.602° (True).

Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
5300.00	5299.83	25.42 S	3.84 W	Tie-on to Gyro Data.
5435.00	5434.82	26.32 S	3.47 W	Interpolate Gyro Survey to Top of Whipstock.
5444.00	5443.82	26.06 S	3.59 W	Start SSDS-MWD Surveys (Interpolate Azimuth)
5484.00	5482.61	17.25 S	5.28 W	Slight Magnetic Interference on MWD Surveys.
5594.00	5555.04	60.70 N	13.80 W	Final Magnetic Interference on MWD Surveys.
5604.00	5557.63	70.26 N	15.18 W	Full MWD Surveys.
8046.00	5567.38	1956.81 N	1485.99 W	Final SSDS-MWD Survey Station.
8091.00	5567.07	1987.18 N	1519.19 W	Projection to Bit.

**San Juan County
Utah
Ratherford Unit
RU 20-66**

Mobil



Prepared:

Checked:

Approved:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT -" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

MOBIL PRODUCING TX & NM INC.*
*MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM

3. Address and Telephone No.

P.O. Box 633, Midland TX 79702 (915) 688-2585

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SEC. 20, T41S, R24E
(SW/NW) 1221' FWL & 1369' FNL

FORM APPROVED

Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.

14-20-603-353

6. If Indian, Allottee or Tribe Name

NAVAJO TRIBAL

7. If Unit or CA, Agreement Designation

RATHERFORD UNIT

8. Well Name and No.

RATHERFORD 20-66

9. API Well No.

43-037-31592

10. Field and Pool, or exploratory Area

GREATER ANETH

11. County or Parish, State

SAN JUAN UT

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☐ Notice of Intent
☒ Subsequent Report
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Abandonment
☐ Recompletion
☐ Plugging Back
☐ Casing Repair
☐ Altering Casing
☒ Other SIDETRACK
- ☐ Change of Plans
☐ New Construction
☐ Non-Routine Fracturing
☐ Water Shut-Off
☐ Conversion to Injection
☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

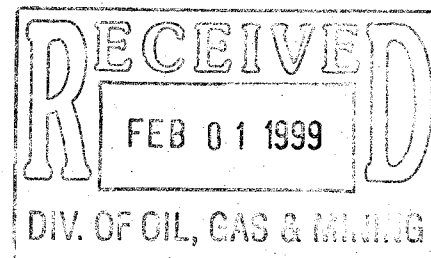
13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

BHL:

LATERAL #1: 1192' NORTH & 1968' WEST /FROM SURFACE SPOT (ZONE 1B).
LATERAL #2: 1987' NORTH & 1519' WEST /FROM SURFACE SPOT (ZONE 1A).

9-01-98 -- 10-12-98 HORIZONTAL RECOMPLETION.

SEE ATTACHED FORM 15



14. I hereby certify that the foregoing is true and correct

Signed

Shirley Houchins

Title SHIRLEY HOUCHINS/ENV & REG TECH

Date 1-28-99

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

* See Instruction on Reverse Side

WTC
3-1-99
RSH

ExxonMobil Production Comp
U.S. West
P.O. Box 4358
Houston, Texas 77210-4358

June 27, 2001

ExxonMobil
Production

Mr. Jim Thompson
State of Utah, Division of Oil, Gas and Mining
1549 West North Temple
Suite 1210
Salt Lake City, UT 84114-5801

Change of Name – Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Mr. Thompson

Effective June 1, 2001, Mobil Oil Corporation (MOC) changed its name to ExxonMobil Oil Corporation (EMOC). This was a name change only; EMOC is the same corporation as Mobil Oil Corporation, but with a new name. No facility or other asset was transferred from one corporation to another by virtue of the name change. Specifically, EMOC will remain the owner and operator of its existing exploration and production oil and gas properties and facilities, as well as relevant permits.

There is no change to the name of Exxon Mobil Corporation, the ultimate shareholder of EMOC.

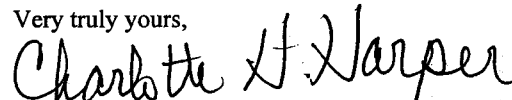
Please note the change of name of MOC to ExxonMobil Oil Corporation in your records pertaining to any MOC permits.

The Federal Identification Number for MOC (13-5401570) will remain the same for EMOC.

A copy of the Certification, Bond Rider and a list of wells are attached.

If you have any questions please feel free to call Joel Talavera at 713-431-1010

Very truly yours,



Charlotte H. Harper
Permitting Supervisor

ExxonMobil Production Company
a division of Exxon Mobil Corporation,
acting for ExxonMobil Oil Corporation

RECEIVED

JUN 29 2001

DIVISION OF
OIL, GAS AND MINING



IN REPLY REFER TO:

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
~~XXXXXXXXXXXXXX~~
 Navajo Area Office
NAVAJO REGION

P.O. Box 1060
 Gallup, New Mexico 87305-1060

AUG 30 2001

RRES/543

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Charlotte H. Harper, Permitting Supervisor
 Exxon Mobil Production Company
 U. S. West
 P. O. Box 4358
 Houston, TX 77210-4358

Dear Ms. Harper:

This is to acknowledge receipt of your company's name change from Mobil Oil Corporation to ExxonMobil Oil Corporation effective June 1, 2001. The receipt of documents includes the Name Change Certification, current listing of Officers and Directors, Listing of Leases, Financial Statement, filing fees of \$75.00 and a copy of the Rider for Bond Number 8027 31 97. There are no other changes.

Please note that we will provide copies of these documents to other concerned parties. If you need further assistance, you may contact Ms. Bertha Spencer, Realty Specialist, at (928) 871-5938.

Sincerely,

GENE DENETSON

Regional Realty Officer

cc: BLM, Farmington Field Office w/enclosures ✓
 Navajo Nation Minerals Office, Attn: Mr. Akhtar Zaman, Director/w enclosures

MINERAL RESOURCES	
ADM	<i>DB/MC</i>
NATV AM M N COORD	
SOLID MIN TEAM	
PERM MENT TEAM	<i>2</i>
O & G INSPECT TEAM	
ALL TEAM LEADERS	
LAND RESOURCES	
ENVIRONMENT	
FILES	

ExxonMobil Production Company
U.S. West
P.O. Box 4358
Houston, Texas 77210-4358

PS 7/12/01

SN

543

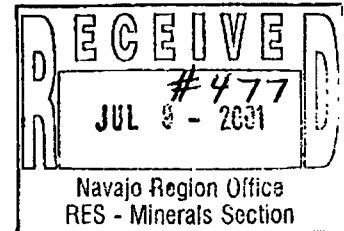
File

June 27, 2001

ExxonMobil
Production

Certified Mail
Return Receipt Requested

Ms. Genni Denetsone
United States Department of the Interior
Bureau of Indian Affairs, Navajo Region
Real Estate Services
P. O. Box 1060
Gallup, New Mexico 87305-1060
Mail Code 543



Change of Name -
Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Ms. Denetsone:

Effective June 1, 2001, Mobil Oil Corporation (MOC) changed its name to ExxonMobil Oil Corporation (EMOC). This was a name change only; EMOC is the same corporation as Mobil Oil Corporation, but with a new name. No facility or other asset was transferred from one corporation to another by virtue of the name change. Specifically, EMOC will remain the owner and operator of its existing exploration and production oil and gas properties and facilities, as well as relevant permits.

There is no change to the name of Exxon Mobil Corporation, the ultimate shareholder of EMOC.

Please note the change of name of MOC to ExxonMobil Oil Corporation in your records pertaining to any MOC permits.

The Federal Identification Number for MOC (13-5401570) will remain the same for EMOC.

Attached is the Name Change Certification, Current listing of Officers and Directors, Filing Fee of \$75/-. Listing of Leases, Financial Statement and a copy of the Rider for Bond number 8027 31 97. The original Bond Rider has been sent to Ms. Barbar Davis at your Washington Office.

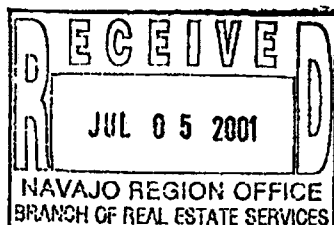
If you have any questions, please contact Alex Correa at (713) 431-1012.

Very truly yours,

Charlotte H. Harper

Charlotte H. Harper
Permitting Supervisor

Attachments



ExxonMobil Production Company
a division of Exxon Mobil Corporation,
acting for ExxonMobil Oil Corporation

NOTE: Check forwarded to Ella Issa

Bureau of Indian Affairs
Navajo Region Office
Attn: RRES - Mineral and Mining Section
P.O. Box 1060
Gallup, New Mexico 87305-1060

Gentlemen:

The current listing of officers and director of ExxonMobil Oil Corporation (Name of Corporation), of New York (State) is as follows:

OFFICERS

President	<u>F.A. Risch</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Vice President	<u>K.T. Koonce</u>	Address <u>800 Bell Street Houston, TX 77002</u>
Secretary	<u>F.L. Reid</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Treasure	<u>B.A. Maher</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>

DIRECTORS

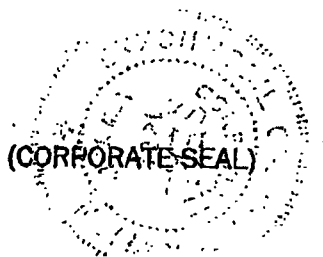
Name	<u>D.D. Humphreys</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>P.A. Hanson</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>T.P. Townsend</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>B.A. Maher</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>F.A. Risch</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>

Sincerely,



Alex Correa

This is to certify that the above information pertaining to ExxonMobil Oil Corporation (Corporation) is true and correct as evidenced by the records and accounts covering business for the State of Utah and in the custody of Corporation Service Company (Agent), Phone: 1 (800) 927-9800, whose business address is One Utah Center, 201 South Main Street, Salt Lake City, Utah 84111-2218



Signature

AGENT AND ATTORNEY IN FACT

Title

SAL

CERTIFICATION

I, the undersigned Assistant Secretary of ExxonMobil Oil Corporation. (formerly Mobil Oil Corporation), a corporation organized and existing under the laws of the State of New York, United States of America, DO HEREBY CERTIFY, That, the following is a true and exact copy of the resolutions adopted by the Board of Directors on May 22, 2001:

CHANGE OF COMPANY NAME

WHEREAS, the undersigned Directors of the Corporation deem it to be in the best interest of the Corporation to amend the Certificate of Incorporation of the Corporation to change the name and principal office of the Corporation:

NOW THEREFORE BE IT RESOLVED, That Article 1st relating to the corporate name is hereby amended to read as follows:

"1st The corporate name of said Company shall be,

ExxonMobil Oil Corporation",

FURTHER RESOLVED, That the amendment of the Corporation's Certificate of Incorporation referred to in the preceding resolutions be submitted to the sole shareholder of the Corporation entitled to vote thereon for its approval and, if such shareholder gives its written consent, pursuant to Section 803 of the Business Corporation Law of the State of New York, approving such amendment, the proper officers of the Corporation be, and they hereby are, authorized to execute in the name of the Corporation the Certificate of Amendment of Certificate of Incorporation, in the form attached hereto;

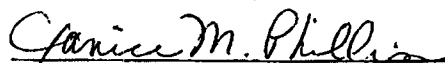
FURTHER RESOLVED, That the proper officers of the Corporation be and they hereby are authorized and directed to deliver, file and record in its behalf, the Certificate of Amendment of Certificate of Incorporation, and to take such action as may be deemed necessary or advisable to confirm and make effective in all respects the change of this Company's name to EXXONMOBIL OIL CORPORATION.

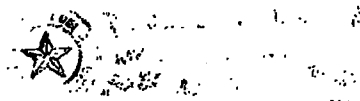
WITNESS, my hand and the seal of the Corporation at Irving, Texas, this 8th day of June, 2001.


Assistant Secretary

COUNTY OF DALLAS)
STATE OF TEXAS)
UNITED STATES OF AMERICA)

Sworn to and subscribed before me at Irving, Texas, U. S. A. on this the 8th day of June, 2001.


Notary Public



LISTING OF LEASES OF MOBIL OIL CORPORATION**Lease Number**

- 1) 14-20-0603-6504
- 2) 14-20-0603-6505
- 3) 14-20-0603-6506
- 4) 14-20-0603-6508
- 5) 14-20-0603-6509
- 6) 14-20-0603-6510
- 7) 14-20-0603-7171
- 8) 14-20-0603-7172A
- 9) 14-20-600-3530
- 10) 14-20-603-359
- 11) 14-20-603-368
- 12) 14-20-603-370
- 13) 14-20-603-370A
- 14) 14-20-603-372
- 15) 14-20-603-372A
- 16) 14-20-603-4495
- 17) 14-20-603-5447
- 18) 14-20-603-5448
- 19) 14-20-603-5449
- 20) 14-20-603-5450
- 21) 14-20-603-5451

6/1/01

CHUBB GROUP OF INSURANCE COMPANIES

One Chubb Center, Suite 1900, Houston, Texas 77027-3301
Houston, TX 77027-4600 • Fax: (713) 297-4750

NW Bond

FEDERAL INSURANCE COMPANY RIDER
to be attached to and form a part of

BOND NO 8027 31 97

wherein

Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc. is
named as Principal and

FEDERAL INSURANCE COMPANY AS SURETY,

in favor of United States of America, Department of the Interior
Bureau of Indian Affairs

in the amount of \$150,000.00
bond date: 11/01/65

IT IS HEREBY UNDERSTOOD AND AGREED THAT effective June 1, 2001
the name of the Principal is changed

FROM: Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc.

TO : ExxonMobil Oil Corporation

All other terms and conditions of this Bond are unchanged.

Signed, sealed and dated this 12th of June, 2001.

ExxonMobil Oil Corporation

By : 

FEDERAL INSURANCE COMPANY

By: 
Mary Pierson, Attorney-in-fact

**Chubb
Surety****POWER
OF
ATTORNEY****Federal Insurance Company
Vigilant Insurance Company
Pacific Indemnity Company****Attn.: Surety Department
15 Mountain View Road
Warren, NJ 07059**

Know All by These Presents, That **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, and **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, do each hereby constitute and appoint **R.F. Bobo**, Mary Pierson, Philana Berros, and Jody E. Specht of Houston, Texas-----

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY** have each executed and attested these presents and affixed their corporate seals on this 10th day of May, 2001.

Kenneth C. Wendel
Kenneth C. Wendel, Assistant Secretary

Frank E. Robertson
Frank E. Robertson, Vice President

STATE OF NEW JERSEY } ss.
County of Somerset

On this 10th day of May, 2001, before me, a Notary Public of New Jersey, personally came Kenneth C. Wendel, to me known to be Assistant Secretary of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY**, the companies which executed the foregoing Power of Attorney, and the said Kenneth C. Wendel being by me duly sworn, did depose and say that he is Assistant Secretary of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY** and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of the By-Laws of said Companies; and that he signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that he is acquainted with Frank E. Robertson, and knows him to be Vice President of said Companies; and that the signature of Frank E. Robertson, subscribed to said Power of Attorney is in the genuine handwriting of Frank E. Robertson, and was thereto subscribed by authority of said Companies in the presence of the Notary Public.



Notary Public State of New Jersey
No. 2231647

Commission Expires Oct. 28, 2004

Karen A. Price
Notary Public

Extract from the By-Laws of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY**:

"All powers of attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman or the President or a Vice President or an Assistant Vice President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed. The signature of each of the following officers: Chairman, President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached."

I, Kenneth C. Wendel, Assistant Secretary of **FEDERAL INSURANCE COMPANY**, **VIGILANT INSURANCE COMPANY**, and **PACIFIC INDEMNITY COMPANY** (the "Companies") do hereby certify that

- (i) the foregoing extract of the By-Laws of the Companies is true and correct,
- (ii) the Companies are duly licensed and authorized to transact surety business in all 50 of the United States of America and the District of Columbia and are authorized by the U. S. Treasury Department; further, Federal and Vigilant are licensed in Puerto Rico and the U. S. Virgin Islands, and Federal is licensed in American Samoa, Guam, and each of the Provinces of Canada except Prince Edward Island; and
- (iii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Warren, NJ this 12th day of June, 2001



Kenneth C. Wendel
Kenneth C. Wendel, Assistant Secretary

IN THE EVENT YOU WISH TO NOTIFY US OF A CLAIM, VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT ADDRESS LISTED ABOVE, OR BY
Telephone (908) 903-3485 Fax (908) 903-3656 e-mail: surety@chubb.com

CSC

5184334741

06/01 '01 08:46 NO.410 03/05

CSC

06/01 '01 09:06 NO.135 02/04

F010601000187

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
MOBIL OIL CORPORATION

CSC 45

(Under Section 805 of the Business Corporation Law)

Pursuant to the provisions of Section 805 of the Business Corporation Law, the undersigned President and Secretary, respectively, of Mobil Oil Corporation hereby certify:

FIRST: That the name of the corporation is MOBIL OIL CORPORATION and that said corporation was incorporated under the name of Standard Oil Company of New York.

SECOND: That the Certificate of Incorporation of the corporation was filed by the Department of State, Albany, New York, on the 10th day of August, 1882.

THIRD: That the amendments to the Certificate of Incorporation effected by this Certificate are as follows:

(a) Article 1st of the Certificate of Incorporation, relating to the corporate name, is hereby amended to read as follows:

"1st The corporate name of said Company shall be,
ExxonMobil Oil Corporation",

(b) Article 7th of the Certificate of Incorporation, relating to the office of the corporation is hereby amended to read as follows:

The office of the corporation within the State of New York is to be located in the County of Albany. The Company shall have offices at such other places as the Board of Directors may from time to time determine.

CSC
CSC

5184334741

06/01 '01 08:47 NO.410 04/05
06/01 '01 07:06 NO.133 03/04

FOURTH: That the amendments to the Certificate of Incorporation were authorized by the Board of Directors followed by the holder of all outstanding shares entitled to vote on amendments to the Certificate of Incorporation by written consent of the sole shareholder dated May 22, 2001.

IN WITNESS WHEREOF, this Certificate has been signed this 22nd Day of May, 2001.


F. A. Risch, President

STATE OF TEXAS)
COUNTY OF DALLAS)

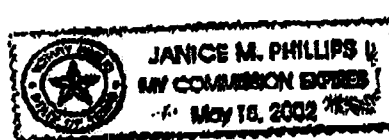
F. L. REID, being duly sworn, deposes and says that he is the Secretary of MOBIL OIL CORPORATION, the corporation mentioned and described in the foregoing instrument; that he has read and signed the same and that the statements contained therein are true.


F. L. REID, Secretary

SUBSCRIBED AND SWORN TO before me, the undersigned authority, on this the 22nd day of May, 2001.

[SEAL]


NOTARY PUBLIC, STATE OF TEXAS



=> CSC

.TEL=5184334741

06/01 '01 08:19

CSC
CSC

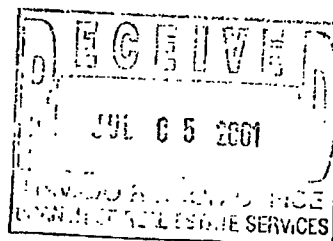
5184334741

06/01 '01 09:01 NO. 411 02/02
06/01 '01 09:06 NO. 133 04/04
F010601000187**CSC 45****CERTIFICATE OF AMENDMENT****OF****MOBIL OIL CORPORATION**

Under Section 805 of the Business Corporation Law

**STATE OF NEW YORK
DEPARTMENT OF STATE**Filed by: EXXONMOBIL CORPORATION
(Name)

FILED JUN 01 2001

5959 Las Colinas Blvd.
(Mailing address)TAX \$ _____
BY: SACIrving, TX 75039-2298
(City, State and Zip code)ny / AlbanyCust Ref # 1655781MPJ**010601000195**

=> CSC

TEL: 5184334741

06/01 '01 08:19

State of New York }
Department of State } ss:

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

Witness my hand and seal of the Department of State on **JUN 01 2001**



Special Deputy Secretary of State

OPERATOR CHANGE WORKSHEET

ROUTING

1. GLH

2. CDW ✓

3. FILE

Change of Operator (Well Sold)

Designation of Agent

X Operator Name Change

Merger

The operator of the well(s) listed below has changed, effective: **06-01-2001**

FROM: (Old Operator):	TO: (New Operator):
MOBIL EXPLORATION & PRODUCTION	EXXONMOBIL OIL CORPORATION
Address: P O BOX DRAWER "G"	Address: U S WEST P O BOX 4358
CORTEZ, CO 81321	HOUSTON, TX 77210-4358
Phone: 1-(970)-564-5212	Phone: 1-(713)-431-1010
Account No. N7370	Account No. N1855

CA No.

Unit: RATHERFORD

WELL(S)

NAME	SEC TWN RNG	API NO	ENTITY NO	LEASE TYPE	WELL TYPE	WELL STATUS
RATHERFORD UNIT 19-13	19-41S-24E	43-037-31719	6280	INDIAN	OW	P
RATHERFORD UNIT 19-24 (MULTI-LEG)	19-41S-24E	43-037-31754	6280	INDIAN	OW	P
RATHERFORD UNIT 20-44	20-41S-24E	43-037-30915	6280	INDIAN	OW	P
20-13	20-41S-24E	43-037-30917	6280	INDIAN	OW	P
20-24	20-41S-24E	43-037-30918	6280	INDIAN	OW	P
20-22	20-41S-24E	43-037-30930	6280	INDIAN	OW	P
RATHERFORD UNIT 20-33	20-41S-24E	43-037-30931	6280	INDIAN	OW	S
RATHERFORD UNIT 20-11	20-41S-24E	43-037-31049	6280	INDIAN	OW	S
RATHERFORD UNIT 20-31	20-41S-24E	43-037-31050	6280	INDIAN	OW	P
RATHERFORD UNIT 20-42	20-41S-24E	43-037-31051	6280	INDIAN	OW	P
RATHERFORD 20-68	20-41S-24E	43-037-31591	6280	INDIAN	OW	P
RATHERFORD 20-66	20-41S-24E	43-037-31592	6280	INDIAN	OW	P
21-23	21-41S-24E	43-037-13754	6280	INDIAN	OW	S
21-32	21-41S-24E	43-037-15755	6280	INDIAN	OW	S
21-34	21-41S-24E	43-037-15756	6280	INDIAN	OW	S
RATHERFORD UNIT 21-11	21-41S-24E	43-037-31052	6280	INDIAN	OW	S
RATHERFORD UNIT 21-24	21-41S-24E	43-037-31720	6280	INDIAN	OW	P
RATHERFORD UNIT 21-77	21-41S-24E	43-037-31758	6280	INDIAN	OW	S
RATHERFORD UNIT 28-11	28-41S-24E	43-037-30446	6280	INDIAN	OW	P
29-34	29-41S-24E	43-037-15340	6280	INDIAN	OW	P

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

1. (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 06/29/2001
2. (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 06/29/2001
3. The new company has been checked through the **Department of Commerce, Division of Corporations Database** on: 04/09/2002
4. Is the new operator registered in the State of Utah: YES Business Number: 579865-0143
5. If **NO**, the operator was contacted on: N/A

6. **Federal and Indian Lease Wells:** The BLM and or the BIA has approved the merger, name change, or operator change for all wells listed on Federal or Indian leases on: BIA-06/01/01

7. **Federal and Indian Units:**

The BLM or BIA has approved the successor of unit operator for wells listed on: 06/01/2001

8. **Federal and Indian Communization Agreements ("CA"):**

The BLM or BIA has approved the operator for all wells listed within a CA on: N/A

9. **Underground Injection Control ("UIC")**

The Division has approved UIC Form 5, **Transfer of Authority to Inject**, for the enhanced/secondary recovery unit/project for the water disposal well(s) listed on: N/A

DATA ENTRY:

1. Changes entered in the Oil and Gas Database on: 04/15/2002
2. Changes have been entered on the Monthly Operator Change Spread Sheet on: 04/15/2002
3. Bond information entered in RBDMS on: N/A
4. Fee wells attached to bond in RBDMS on: N/A

STATE WELL(S) BOND VERIFICATION:

1. State well(s) covered by Bond Number: N/A

FEDERAL WELL(S) BOND VERIFICATION:

1. Federal well(s) covered by Bond Number: N/A

INDIAN WELL(S) BOND VERIFICATION:

1. Indian well(s) covered by Bond Number: 80273197

FEE WELL(S) BOND VERIFICATION:

1. (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number N/A
2. The **FORMER** operator has requested a release of liability from their bond on: N/A
The Division sent response by letter on: N/A

LEASE INTEREST OWNER NOTIFICATION:

3. (R649-2-10) The **FORMER** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: N/A

COMMENTS:

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

ROUTING

1. DJJ
2. CDW

X Change of Operator (Well Sold)

Operator Name Change/Merger

The operator of the well(s) listed below has changed, effective: 6/1/2006

FROM: (Old Operator):
 N1855-ExxonMobil Oil Corporation
 PO Box 4358
 Houston, TX 77210-4358
 Phone: 1 (281) 654-1936

TO: (New Operator):
 N2700-Resolute Natural Resources Company
 1675 Broadway, Suite 1950
 Denver, CO 80202
 Phone: 1 (303) 534-4600

CA No.

Unit:

RATHERFORD

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

- (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 4/21/2006
- (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 4/24/2006
- The new company was checked on the **Department of Commerce, Division of Corporations Database** on: 6/7/2006
- Is the new operator registered in the State of Utah: YES Business Number: 5733505-0143
- If **NO**, the operator was contacted on: _____
- (R649-9-2) Waste Management Plan has been received on: requested
- Inspections of LA PA state/fee well sites complete on: n/a
- Reports current for Production/Disposition & Sundries on: ok
- Federal and Indian Lease Wells:** The BLM and or the BIA has approved the merger, name change, or operator change for all wells listed on Federal or Indian leases on: BLM n/a BIA not yet
- Federal and Indian Units:**
 The BLM or BIA has approved the successor of unit operator for wells listed on: not yet
- Federal and Indian Communization Agreements ("CA"):**
 The BLM or BIA has approved the operator for all wells listed within a CA on: n/a
- Underground Injection Control ("UIC")** The Division has approved UIC Form 5, **Transfer of Authority to Inject**, for the enhanced/secondary recovery unit/project for the water disposal well(s) listed on: 6/12/2006

DATA ENTRY:

- Changes entered in the **Oil and Gas Database** on: 6/22/2006
- Changes have been entered on the **Monthly Operator Change Spread Sheet** on: 6/22/2006
- Bond information entered in RBDMS on: n/a
- Fee/State wells attached to bond in RBDMS on: n/a
- Injection Projects to new operator in RBDMS on: 6/22/2006
- Receipt of Acceptance of Drilling Procedures for APD/New on: n/a

BOND VERIFICATION:

- Federal well(s) covered by Bond Number: n/a
- Indian well(s) covered by Bond Number: PA002769
- (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number n/a
- The **FORMER** operator has requested a release of liability from their bond on: n/a
 The Division sent response by letter on: n/a

LEASE INTEREST OWNER NOTIFICATION:

- (R649-2-10) The **FORMER** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: n/a

COMMENTS:

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

5. LEASE DESIGNATION AND SERIAL NUMBER:

See attached list

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

Navajo Tribe

7. UNIT or CA AGREEMENT NAME:

Ratherford Unit

8. WELL NAME and NUMBER:

See attached list

9. API NUMBER:

Attached

10. FIELD AND POOL, OR WILDCAT:

Greater Aneth

1. TYPE OF WELL

OIL WELL ☐

GAS WELL ☐

OTHER Unit Agreement

2. NAME OF OPERATOR:

Resolute Natural Resources Company

N2700

3. ADDRESS OF OPERATOR:

1675 Broadway, Suite 1950

CITY

Denver

STATE

CO

ZIP

80202

PHONE NUMBER:

(303) 534-4600

4. LOCATION OF WELL

FOOTAGES AT SURFACE: See attached list

COUNTY: San Juan

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:

STATE:

UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

☐ NOTICE OF INTENT
(Submit in Duplicate)

Approximate date work will start:

☒ SUBSEQUENT REPORT
(Submit Original Form Only)

Date of work completion:

☐ ACIDIZE

☐ ALTER CASING

☐ CASING REPAIR

☐ CHANGE TO PREVIOUS PLANS

☐ CHANGE TUBING

☐ CHANGE WELL NAME

☐ CHANGE WELL STATUS

☐ COMMINGLE PRODUCING FORMATIONS

☐ CONVERT WELL TYPE

☐ DEEPEN

☐ FRACTURE TREAT

☐ NEW CONSTRUCTION

☒ OPERATOR CHANGE

☐ PLUG AND ABANDON

☐ PLUG BACK

☐ PRODUCTION (START/RESUME)

☐ RECLAMATION OF WELL SITE

☐ RECOMPLETE - DIFFERENT FORMATION

☐ REPERFORATE CURRENT FORMATION

☐ SIDETRACK TO REPAIR WELL

☐ TEMPORARILY ABANDON

☐ TUBING REPAIR

☐ VENT OR FLARE

☐ WATER DISPOSAL

☐ WATER SHUT-OFF

☐ OTHER: _____

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Effective June 1, 2006 Exxon Mobil Oil Corporation resigns as operator of the Ratherford Unit. Also effective June 1, 2006 Resolute Natural Resources Company is designated as successor operator of the Ratherford Unit.

A list of affected producing and water source wells is attached. A separate of affected injection wells is being submitted with UIC Form 5, Transfer of Authority to Inject.

As of the effective date, bond coverage for the affected wells will transfer to BIA Bond # PA002769.

NAME (PLEASE PRINT)

Dwight E Mallory

TITLE

Regulatory Coordinator

SIGNATURE

DATE

4/20/2006

(This space for State use only)

APPROVED 6127106

Earlene Russell

Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

RECEIVED

APR 24 2006

DIV. OF OIL, GAS & MINING

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

1. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER _____		5. LEASE DESIGNATION AND SERIAL NUMBER: Ship Rock
2. NAME OF OPERATOR: ExxonMobil Oil Corporation <i>N1855</i>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Ship Rock
3. ADDRESS OF OPERATOR: P.O. Box 4358 CITY Houston STATE TX ZIP 77210-4358		7. UNIT or CA AGREEMENT NAME: UTU68931A
4. LOCATION OF WELL FOOTAGES AT SURFACE: _____ QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: _____		8. WELL NAME and NUMBER: Ratherford
PHONE NUMBER: (281) 654-1936		9. API NUMBER: attached
COUNTY: San Juan		10. FIELD AND POOL, OR WILDCAT: Aneth
STATE: UTAH		

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: <u>6/1/2006</u>	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input checked="" type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> OTHER: _____
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

ExxonMobil Oil Corporation is transferring operatorship of Greater Aneth field, Ratherford lease to Resolute Natural Resources Company. All change of operator notices should be made effective as of 7:00 AM MST on June 1, 2006.

Attached please find a listing of producers and water source wells included in the transfer.

NAME (PLEASE PRINT) <u>Laurie Kilbride</u>	TITLE <u>Permitting Supervisor</u>
SIGNATURE <i>Laurie B. Kilbride</i>	DATE <u>4/19/2006</u>

(This space for State use only)

APPROVED 6/27/06
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

(See Instructions on Reverse Side)

RECEIVED
APR 21 2006

DIV. OF OIL, GAS & MINING

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	01-14	430373116200S1	Producing	1420603246A	1	41S	23E	SWSW	0660FSL	0660FWL
Ratherford	01-34	430371638501S1	SI	1420603246A	1	41S	23E	SWSE	1133FSL	1980FEL
Ratherford	11-41	430373154400S1	Producing	1420603246A	11	41S	23E	NENE	0860FNL	0350FEL
Ratherford	11-43	430373162201S1	Producing	1420603246A	11	41S	23E	NESE	1980FSL	0660FEL
Ratherford	12-12	430373119000S1	Producing	1420603246A	12	41S	23E	SWNW	1850FNL	0660FWL
Ratherford	12-14	430371584400S1	SI	1420603246A	12	41S	23E	SWSW	0660FSL	4622FEL
Ratherford	12-21	430373120100S1	Producing	1420603246A	12	41S	23E	NENW	0660FNL	1980FWL
Ratherford	12-23	430371584601S1	Producing	1420603246A	12	41S	23E	NESW	1958FSL	3300FEL
Ratherford	12-32	430373120300S1	Producing	1420603246A	12	41S	23E	SWNE	1820FNL	1820FEL
Ratherford	12-34	430373112600S1	Producing	1420603246A	12	41S	23E	SWSE	0675FSL	1905FEL
Ratherford	12-43	430373120200S1	SI	1420603246A	12	41S	23E	NESE	2100FSL	0660FEL
Ratherford	13-12	430373112701S1	Producing	1420603247A	13	41S	23E	SWNW	1705FNL	0640FWL
Ratherford	13-14	430373158900S1	Producing	1420603247A	13	41S	23E	SWSW	0660FSL	0660FWL
Ratherford	13-21	430373112801S1	SI	1420603247A	13	41S	23E	NENW	0660FNL	1920FWL
Ratherford	13-23	430373112900S1	Producing	1420603247A	13	41S	23E	NESW	1980FSL	1930FWL
Ratherford	13-34	430373113001S1	Producing	1420603247A	13	41S	23E	SWSE	0660FSL	1980FEL
Ratherford	13-41	430371585601S1	Producing	1420603247A	13	41S	23E	NENE	660FNL	660FEL
Ratherford	13-43	430373113100S1	Producing	1420603247A	13	41S	23E	NESE	1700FSL	0960FEL
Ratherford	14-32	430371585801S1	Producing	1420603247A	14	41S	23E	SWNE	2130FNL	1830FEL
Ratherford	14-41	430373162300S1	Producing	1420603247A	14	41S	23E	NENE	0521FNL	0810FEL
Ratherford	24-32	430373159300S1	Producing	1420603247A	24	41S	23E	SWNE	2121FNL	1846FEL
Ratherford	24-41	430373113200S1	Producing	1420603247A	24	41S	23E	NENE	0660FNL	0710FEL
Ratherford	17-11	430373116900S1	Producing	1420603353	17	41S	24E	NWNW	1075FNL	0800FWL
Ratherford	17-13	430373113301S1	Producing	1420603353	17	41S	24E	NWSW	2100FSL	0660FWL
Ratherford	17-22	430373117001S1	Producing	1420603353	17	41S	24E	SENE	1882FNL	1910FWL
Ratherford	17-24	430373104400S1	Producing	1420603353	17	41S	24E	SESW	0720FSL	1980FWL
Ratherford	17-31	430373117800S1	Producing	1420603353	17	41S	24E	NWNE	0500FNL	1980FEL
Ratherford	17-33	430373113400S1	Producing	1420603353	17	41S	24E	NWSE	1980FSL	1845FEL
Ratherford	17-42	430373117700S1	Producing	1420603353	17	41S	24E	SENE	1980FNL	0660FEL
Ratherford	17-44	430371573201S1	Producing	1420603353	17	41S	24E	SESE	0660FSL	0660FEL
Ratherford	18-11	430371573300S1	SI	1420603353	18	41S	24E	NWNW	0720FNL	0730FWL
Ratherford	18-13	430371573401S1	Producing	1420603353	18	41S	24E	NWSW	1980FSL	0500FWL
Ratherford	18-22	430373123600S1	Producing	1420603353	18	41S	24E	SENE	2200FNL	2210FWL
Ratherford	18-24	430373107900S1	Producing	1420603353	18	41S	24E	SESW	0760FSL	1980FWL
Ratherford	18-31	430373118101S1	Producing	1420603353	18	41S	24E	NWNE	0795FNL	2090FEL
Ratherford	18-33	430373113501S1	Producing	1420603353	18	41S	24E	NWSE	1870FSL	1980FEL
Ratherford	18-42	430373118200S1	Producing	1420603353	18	41S	24E	SENE	2120FNL	0745FEL
Ratherford	18-44	430373104500S1	SI	1420603353	18	41S	24E	SESE	0660FSL	0660FEL
Ratherford	19-11	430373108000S1	Producing	1420603353	19	41S	24E	NWNW	0660FNL	0660FWL
Ratherford	19-13	430373171900S1	Producing	1420603353	19	41S	24E	NWSW	1980FSL	0660FWL
Ratherford	19-22	430373104601S1	Producing	1420603353	19	41S	24E	SENE	1840FNL	1980FWL
Ratherford	19-24	430373175401S1	Producing	1420603353	19	41S	24E	SESW	0600FSL	1980FWL
Ratherford	19-31	430373104701S1	Producing	1420603353	19	41S	24E	NWNE	510FNL	1980FEL
Ratherford	19-33	430373104800S1	Producing	1420603353	19	41S	24E	NWSE	1980FSL	1980FEL
Ratherford	19-42	430373091600S1	Producing	1420603353	19	41S	24E	SENE	1880FNL	0660FEL
Ratherford	19-44	430373108100S1	Producing	1420603353	19	41S	24E	SESE	0660FSL	0660FEL
Ratherford	19-97	430373159600S1	Producing	1420603353	19	41S	24E	SENE	2562FNL	0030FEL
Ratherford	20-11	430373104900S1	Producing	1420603353	20	41S	24E	NWNW	0500FNL	0660FWL
Ratherford	20-13	430373091700S1	Producing	1420603353	20	41S	24E	NWSW	2140FSL	0500FWL
Ratherford	20-22	430373093000S1	Producing	1420603353	20	41S	24E	SENE	2020FNL	2090FWL
Ratherford	20-24	430373091800S1	Producing	1420603353	20	41S	24E	SESW	0820FSL	1820FWL

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	20-31	430373105001S1	Producing	1420603353	20	41S	24E	NWNE	0660FNL	1880FEL
Ratherford	20-33	430373093100S1	Producing	1420603353	20	41S	24E	NWSE	1910FSL	2140FEL
Ratherford	20-42	430373105100S1	Producing	1420603353	20	41S	24E	SENE	1980FNL	0660FEL
Ratherford	20-44	430373091501S1	Producing	1420603353	20	41S	24E	SESE	0620FSL	0760FEL
Ratherford	20-66	430373159201S1	Producing	1420603353	20	41S	24E	SWNW	1369FNL	1221FWL
Ratherford	20-68	430373159100S1	Producing	1420603353	20	41S	24E	NWSW	1615FSL	1276FWL
Ratherford	15-12	430371571501S1	Producing	1420603355	15	41S	24E	SWNW	1820FNL	0500FWL
Ratherford	15-22	430373044900S1	SI	1420603355	15	41S	24E	SENE	1980FNL	2050FWL
Ratherford	15-32	430371571700S1	Producing	1420603355	15	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	15-33	430371571800S1	Producing	1420603355	15	41S	24E	NWSE	1650FSL	1980FEL
Ratherford	15-41	430371571900S1	TA	1420603355	15	41S	24E	NENE	0660FNL	0660FEL
Ratherford	15-42	430373044800S1	Producing	1420603355	15	41S	24E	SENE	2020FNL	0820FEL
Ratherford	16-13	430373116801S1	Producing	1420603355	16	41S	24E	NWSW	1980FSL	660FWL
Ratherford	16-32	430371572300S1	Producing	1420603355	16	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	16-41	430371572500S1	Producing	1420603355	16	41S	24E	NENE	0660FNL	0660FEL
Ratherford	16-77	430373176800S1	Producing	1420603355	16	41S	24E	NESW	2587FSL	2410FWL
Ratherford	21-23	430371375400S1	Producing	1420603355	21	41S	24E	NESW	1740FSL	1740FWL
Ratherford	21-24	430373172001S1	SI	1420603355	21	41S	24E	SESW	487FSL	2064FWL
Ratherford	21-32	430371575500S1	SI	1420603355	21	41S	24E	SWNE	1880FNL	1980FEL
Ratherford	21-77	430373175801S1	SI	1420603355	21	41S	24E	NWSE	2511FSL	2446FEL
Ratherford	07-11	430373116300S1	Producing	1420603368	7	41S	24E	NWNW	0660FNL	0710FWL
Ratherford	07-13	430373116400S1	Producing	1420603368	7	41S	24E	NWSW	2110FSL	0740FWL
Ratherford	07-22	430373116500S1	Producing	1420603368	7	41S	24E	SENE	1980FNL	1980FWL
Ratherford	07-24	430373116600S1	Producing	1420603368	7	41S	24E	SESW	0880FSL	2414FWL
Ratherford	07-44	430373118900S1	SI	1420603368	7	41S	24E	SESE	0737FSL	0555FEL
Ratherford	08-12	430371599100S1	Producing	1420603368	8	41S	24E	SWNW	1909FNL	0520FWL
Ratherford	08-21	430371599300S1	Producing	1420603368	8	41S	24E	NENW	0616FNL	1911FWL
Ratherford	08-23	430371599400S1	Producing	1420603368	8	41S	24E	NESW	1920FSL	2055FWL
Ratherford	08-32	430371599500S1	Producing	1420603368	8	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	08-34	430371599600S1	Producing	1420603368	8	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	04-34	430371616400S1	Producing	14206034035	4	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	11-14	430371616700S1	Producing	14206034037	11	41S	24E	SWSW	0660FSL	0660FWL
Ratherford	09-34	430371571100S1	SI	14206034043	9	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	10-12	430371571200S1	Producing	14206034043	10	41S	24E	SWNW	1980FNL	0660FWL
Ratherford	10-14	430371571300S1	Producing	14206034043	10	41S	24E	SWSW	0510FSL	0710FWL
Ratherford	10-32	430371571400S1	TA	14206034043	10	41S	24E	SWNE	2080FNL	1910FEL
Ratherford	10-44	430373045100S1	TA	14206034043	10	41S	24E	SESE	0820FSL	0510FEL
Ratherford	29-11	430373105300S1	Producing	1420603407	29	41S	24E	NWNW	0770FNL	0585FWL
Ratherford	29-22	430373108200S1	Producing	1420603407	29	41S	24E	SENE	2130FNL	1370FWL
Ratherford	29-31	430373091401S1	Producing	1420603407	29	41S	24E	NWNE	0700FNL	2140FEL
Ratherford	29-33	430373093200S1	SI	1420603407	29	41S	24E	NWSE	1860FSL	1820FEL
Ratherford	29-34	430371534000S1	SI	1420603407	29	41S	24E	SWSE	0817FSL	2096FEL
Ratherford	29-42	430373093700S1	SI	1420603407	29	41S	24E	SENE	1850FNL	0660FEL
Ratherford	30-32	430371534200S1	Producing	1420603407	30	41S	24E	SWNE	1975FNL	2010FEL
Ratherford	28-11	430373044600S1	Producing	1420603409	28	41S	24E	NWNW	0520FNL	0620FWL

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	09-12	430371512600S1	Producing	14206035045	9	41S	24E	SWNW	1865FNL	0780FWL
Ratherford	09-14	430371512700S1	Producing	14206035046	9	41S	24E	SWSW	0695FSL	0695FWL
Ratherford	04-14	430371616300S1	Producing	14206035446	4	41S	24E	SWSW	0500FSL	0660FWL
Ratherford	03-12	430371562000S1	Producing	14206036506	3	41S	24E	SWNW	2140FNL	0660FWL

Water Source Wells (Feb 2006)

RU	S1	4303700001	Active
RU	S2	4303700002	Active
RU	S3	4303700003	Active
RU	S4	4303700004	Active
RU	S5	4303700005	Active
RU	S6	4303700006	Active
RU	S7	4303700007	Active
RU	S8	4303700008	Active
RU	S9	4303700009	Active
RU	S10	4303700010	Active
RU	S11	4303700011	Active
RU	S12	4303700012	Active
RU	S13	4303700013	Active
RU	S14	4303700014	Active
RU	S16	4303700016	Active
RU	S17	4303700017	Active